THE IMPACT OF ADVERTISING ON CONSUMER PRICE SENSITIVITY:
A BEHAVIORAL ANALYSIS

By

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In loving memory of my mother--my strongest supporter, best friend and constant source of wisdom and strength, who always inspired me to scale greater heights.

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It is true--there really is light at the end of the tunnel! I'm not sure that I fully realize the implication of the statement as yet. But what I do feel is appreciation for all those who have helped make this dissertation a reality.

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The dissertation investigates the impact of advertising
on consumer price sensitivity. Two opposing schools of
economic thought, the information school and the market power
school, have postulated divergent theoretical accounts about
the way advertising influences consumer behavior and have
made conflicting predictions about the direction of change in
price sensitivity. The fragmentary empirical evidence does
not provide clear support for either theory.

This dissertation postulates that two basic theoretical
constructs mediate the effect of advertising on price
sensitivity: size of the consideration set and the dispersion
of brand utilities. It is suggested that advertising content
and the decision environment have a potentially different
effects on these two constructs.

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Three experiments are conducted to examine the role of such factors in determining the relationship between advertising and price elasticity. The first two studies examine the effects of advertising on the mediating constructs, and provide evidence that advertising could have an effect on the memory for brand names and on the relative preference for the brand alternatives.

The third experiment uses a computer based shopping simulation to test the relationship between advertising and price elasticity, mediated by the two key constructs. Subjects went on shopping trips under two types of decision environments and three advertising conditions. The effects on the size of the consideration set, the dispersion of brand preferences and price elasticity were examined.

The results indicate a very strong interaction effect of advertising and decision environment on the size of the consideration set. The content of advertising also had a significant impact on revealed preference for the various brands. The direction of change in price elasticity was as predicted on the basis of the hypothesized mediating roles of the basic theoretical constructs.

The experiments provide an improved understanding of the relationship between advertising and price elasticity, by isolating the underlying causal mechanisms. The results highlight the important mediating influence of consideration set size and dispersion of brand-utilities in predicting when advertising will have a particular effect.

CHAPTER I

INTRODUCTION

In today's competitive environment, consumers are exposed to a significant amount of mass media advertising on a regular basis. Each day brings with it new exposures to this powerful method of marketer-controlled communication. Because advertising is such an inescapable part of a consumer's life, consumer researchers have paid considerable attention to the study of consumer responses to this element of the marketing mix. The marketing practitioner, too, is interested in consumer responses to advertising, which represents a strategic management tool that the firm can employ to achieve its goals of maximizing profits or market share. Advertising expenditures comprise a substantial portion of the firm's promotion budget; hence the marketer is interested in the long-term consequences of advertising versus other methods of building customer loyalty (Moran 1978).

Aside from the firms and the consumers who are directly involved with its consequences, economists and regulators also study the effects of advertising. The economist, primarily interested in the interactions between the behavior of the firm and the behavior of the consumer, mainly focuses on the determination of the equilibrium level of advertising, its effect on total consumption, industry profits, industrial

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concentration and price levels (Albion & Farris 1981; Norris 1984). Economists are not concerned with consumer responses to advertising per se, but mainly with its implications from a social welfare perspective. The regulatory agencies are charged with the responsibility of providing a fair and competitive environment in which firms may operate, and of ensuring that marketers' activities do not prove to be detrimental to consumer welfare. Thus, the economic effect of advertising is also of interest to the public policy maker in charge of advertising regulation and consumer protection (Bloom 1976).

Even though they are studying the same phenomena, specialists in one field often have little awareness for the activities of researchers in closely related fields. But there remain a number of valid reasons why the interaction between disciplines is important. In many cases, the output of one field of study serves as the input of another. Also, the tools and techniques of one discipline can be effective in answering questions previously studied only by a different discipline. Finally, good policy decisions can benefit from the knowledge and insights that different disciplines have to offer. Thus, our understanding of the economic effects of advertising may be greatly enhanced by the adoption of an interdisciplinary approach.

The focus of this dissertation is on the economic effect of advertising on consumer behavior. This is a topic that

has received considerable attention in industrial organization and social welfare economics. Although the research on the economic effects of advertising originated in the field of economics, its conclusions have been the subject of a long-standing controversy. Economic theory does not make any reliable predictions regarding the effects of advertising. The pragmatic implication of this lack of theoretical foundation is that none of these controversial issues can be settled by a priori reasoning. This has resulted in unresolved disputes about whether advertising raises or lowers profits, leads to increases or decreases in prices paid, increases or decreases industry competition, and the like, with sweeping generalizations made on particular samples of data (Albion & Farris 1981).

Effects of Advertising on Price Elasticity

Although much of the prior research in this area has discussed this issue in the context of industry competition, this dissertation will examine the effect of advertising on consumer price sensitivity. Economists have provided divergent theoretical accounts and have made conflicting predictions about the economic effects of advertising based on implicit assumptions about consumer responses to the information provided by advertising. The empirical research that has appeared in the economics and marketing literature has only tested deductions from these theories and has not

been able to offer any conclusive evidence on this controversial issue.

In this past research, advertising is conceptualized in terms of the total expenditure on this element of the marketing mix. None of these studies has explicitly taken into account variations in advertising content. It is suggested in this dissertation that the results could vary with advertising content, because consumer responses to different types of advertising messages are likely to differ. It is the central thesis of this paper that assertions about the potential effects of advertising on the consumer require a more detailed analysis of the consumer's decision process.

A Behavioral Approach

This dissertation adopts a behavioral approach in an attempt to arrive at an improved understanding of the impact of advertising on consumer price sensitivity. It draws on insights from behavioral literature and focuses on the consumer's choice decision with the objective of identifying the various possible mechanisms by which advertising might affect price sensitivity. In the conceptual framework that is adopted, it is suggested that the effect of advertising on price elasticity could be better understood by examining how advertising influences two mediating variables: the size of the consideration set and the dispersion of brand-utilities.

<u>Advertising-induced changes in the size of the consideration set</u>. The consumer's 'consideration' set consists of those brands that the consumer actively considers at the time of choice. It is proposed that advertising might have a role in placing a brand in the consumer's consideration set and/or keeping other brands out of the set. In other words, advertising might influence consumer choice by ensuring that the sponsored brand is considered at the time of decision making and by simultaneously determining the other alternatives that will be considered along with the advertised brand.

<u>Advertising-induced changes on interbrand dispersion in utilities</u>. Another way in which advertising for a particular brand might affect choice is by changing the dispersion of utilities for the various alternatives. Thus if advertising results in some brands being perceived to be clearly superior to competitive offerings, these brands are likely to be relatively insulated from price competition. These factors are likely to have implications for price sensitivity.

<div align="center"><u>Objective</u></div>

This dissertation attempts to demonstrate that prior conceptualizations that have addressed only one possible relationship between advertising and price sensitivity are too simplistic. In other words, there are different causal mechanisms by which advertising influences consumer price

sensitivity. The objective of this paper is to provide insights on the mechanisms by which advertising might affect consumer behavior and to identify conditions under which these are likely to hold. Using price elasticity as the dependent measure, several propositions that follow from behavioral assumptions about consumer responses to advertising are tested in a laboratory setting.

Chapter II begins with a survey of the literature on the economic effects of advertising. Relevant theoretical and empirical research on the effect of advertising on price elasticity is reviewed. The limitations of previous research in making any theoretical statements about the effects of advertising on consumer behavior are discussed. A conceptual framework is proposed that attempts to better understand and predict the effects of advertising on consumer price sensitivity.

In Chapter III the specific focus of the dissertation is articulated. An experiment designed to test several research hypotheses on advertising's economic effects is presented. Chapter IV presents some propositions, methods and results of two experiments that were designed to serve as pretests for the Experiment 3, which examined the effects of advertising on price elasticity. Chapter V presents the research methodology employed to test the hypotheses. Chapter VI presents the results of the third experiment, which provide strong support for the primary hypotheses.

Chapter VII provides a general discussion of the various findings and the implications of these results for research on the effects of advertising on consumer behavior. Managerial and public policy implications of these findings and directions for future research are also highlighted.

CHAPTER II

TOWARD A CONCEPTUAL FRAMEWORK FOR EXAMINING THE IMPACT OF ADVERTISING ON CONSUMER PRICE SENSITIVITY

Chapter Overview

Historically, the effect of advertising on price sensitivity has been researched by economists. This chapter reviews the relevant background literature on this topic. Two major economic theories of advertising's effects on price elasticity are presented along with empirical evidence. The next section details the conceptual framework that is proposed to examine the economic effect of advertising on consumer behavior.

Economic Theoretic Views of the Role of Advertising

The dominant paradigm in economics assumes that each economic unit (the firm or the consumer) acts as if it is solving a constrained maximization problem. The simultaneous solution of these problems for every economic unit is called a 'market equilibrium.' The most important example of this paradigm is the general equilibrium model of perfect competition in which there are two types of economic units—consumers and firms. Certain characteristics of the consumers' preferences or 'tastes' are taken as axioms of the model and consumer tastes may be mathematically represented by a utility function. It is assumed that the consumer is

rational and chooses quantities of various goods to consume in an attempt to maximize utility. In such a model, prices are determined through the market equilibrium of demand for goods by consumers and their supply by firms.

Economic price theory did not include advertising until the seminal work of Chamberlain (1933). Since that time, it has been theorized in normative models that there is an optimal level of advertising, which is inversely related to price elasticity (Dorfman & Steiner 1954; Nerlove & Arrow 1962). However, there does not exist a generally accepted theoretical view about the economic consequences of advertising. Given this lack of any generally accepted theoretical formulation, divergent streams of research have appeared in the literature. Thus, at the risk of oversimplifying the subtleties of individual economist's positions, we can broadly characterize these as falling into one of two schools of thought, which have been labelled as the 'Advertising = Market Power' view and the 'Advertising = Information' view (Albion & Farris 1981). These two research traditions differ markedly with respect to their assumptions about the way advertising affects consumer behavior.

The market power perspective considers advertising a means of <u>persuasion</u>. In other words, advertising can change consumer tastes and artificially differentiate the product from close substitutes thereby insulating the firm from price competition. Thus, advertising enables the individual firm

and the industry as a whole to charge higher prices and obtain higher profits (Comanor & Wilson 1979). Central to this thesis is the concept of product differentiation. Proponents of the monopoly view (Steiner 1978) often cite the example of national brands of aspirin which dominate the market, in spite of the fact that private-label products are physically identical and sell for less than half the price. The market power view also postulates that advertising by incumbents also creates barriers to entry for new firms in an industry and leads to increased concentration (Bain 1956; Kaldor 1950). This model, though founded on assumptions about consumer reactions to advertising, mainly focuses on the nature of competition within the industry. That is, the focus is on supplier rather than consumer behavior.

An alternative to the change-of-tastes approach has developed from the economics of information theories, beginning with the work of Stigler (1961). According to this view, advertising acts to change the _information_ upon which consumer decisions are based, but not the criteria for judgment. For example, advertising might succeed in convincing a consumer that a certain product has a lower price, is more durable and is easier to use than another product, but it does not alter the consumer's beliefs about the relative importance of the attributes. In other words, it is assumed that consumers have well-defined rankings of desired attributes which are unaffected by advertising.

Thus, advertising simply serves to announce a product's existence and/or attributes. This view holds that advertising is a means of market competition; its function is to provide information to consumers, thereby increasing the number of known substitutes. This results in lower prices and reduces monopoly power (Nelson 1970,1974b; Telser 1963).

Proponents of the information view of advertising distinguish between 'search' goods, whose quality can be evaluated prior to purchase, and 'experience' goods, whose quality can only be evaluated through experience after purchase (Nelson 1974a, 1974b, 1975). Advertising for search goods provides direct information about product quality. There is no incentive on the part of the advertiser to provide inaccurate information about search goods, as consumers are able to recognize the difference between advertised and actual quality prior to purchase. Nelson has argued that the only information contained in advertising for experience goods is the fact that the brand is advertised and is therefore likely to provide more utility per dollar. The rationale for this is that producers of high quality brands have a greater incentive to advertise, as there is a greater likelihood of repeat purchases for such brands compared to low quality brands. Thus consumers may rationally treat the firms' advertising expenditures as a signal of product quality (Kirmani & Wright 1989; Milgrom & Roberts 1986; Nelson 1974). Thus for both search and experience goods,

advertising provides consumers with valuable information about products and consequently reduces consumer search costs.

Evidence of the price-reducing effects of advertising has been drawn from the prescription drug and retail eyeglass industries. Retail prescription drug prices were found to be higher in states that restricted prescription drug price advertising than they were in states that did not (Cady 1976). Price and non-price advertising restrictions were found to increase retail eyeglass prices by 20 to 100 percent (Benham 1972). Moreover, this excess consumer cost did not appear to have brought about any offsetting public health or safety benefits.

From the above discussion, it is clear that there are two general viewpoints among economists about the role of advertising. According to one, advertising is a means of persuasion and according to the other, advertising is a means of transmitting information. These philosophic differences between the economists have influenced their conceptualization of the relationship between advertising and price elasticity, which is discussed in the next section.

The Impact of Advertising on Price Elasticity
Theoretical Foundations

The concept of elasticity of demand occupies a very important position in economics because it is a measure of

market power. The price elasticity of demand refers to the relative change in quantity demanded in response to a relative change in price. Specifically it is defined as the percentage change in the quantity of a product demanded in response to a percentage change in price. The relationship between advertising and price elasticity is therefore of central concern to economists concerned with advertising's effect on industry competition.

In the market power model, advertising is postulated to lead to artificial product differentiation and to lower the perceived substitutability among competing alternatives. The arguments presented in these theories (Bain 1956; Comanor & Wilson 1979) suggest that advertising reduces the price elasticity of demand for firms, allowing them to charge prices above marginal costs and earn higher profits. On the other hand, the information view assumes that consumers do not have perfect information about product qualities, prices and other relevant product characteristics. In this model, price elasticity is taken to be a function of consumer awareness and qualitative knowledge about close brand substitutes rather than their mere existence. Advertising increases the number of known substitutes and also provides information about them. In this way, it increases price sensitivity and reduces monopoly power (Nelson 1970,1974a, 1974b,1975,1978).

From this discussion it is clear that the two schools of economic thought postulate different roles for advertising on the basis of certain implicit assumptions about consumer responses to this marketing variable. However, these assumptions about advertising's potential effect on consumer behavior remain essentially untested. In addition, past conceptualizations have not been able to isolate the various mechanisms by which advertising influences consumer price sensitivity. Thus it is likely that each of the two opposing viewpoints on advertising's potential effect on consumer behavior might hold under a certain set of conditions. It is proposed that a more general framework that takes account of these different relationships between advertising and consumer price sensitivity will be able to offer more insights on this issue. It is suggested in this paper that a more detailed analysis of consumer responses to advertising making use of insights from behavioral research will provide an improved understanding of the effects of advertising on the price elasticity of demand. The objective of the present research is therefore to study individual consumer responses to advertising and price changes. It is hoped that this integrated perspective might ultimately provide more secure behavioral foundations for generalizations at the firm and industry level, but it should be noted that this is not the objective of this research. Hence this research does not

attempt to answer questions regarding the implications of advertising for market competition versus monopoly power.

Empirical Evidence

There have been few empirical studies that directly test the relationship between advertising and price elasticity (Ornstein 1977). Some researchers in economics have found support for the monopoly view of advertising, using data at the brand-level (Lambin 1976) and at the industry-level (Comanor & Wilson 1974). Thus, both aggregated and disaggregated econometric studies have shown advertising to reduce the price elasticity of demand. Some marketing researchers who have specifically tested for the effect of advertising on elasticities have also found support for the view that advertising decreases price elasticity of demand (Krishnamurthi & Raj 1985).

However, it becomes more difficult to make general statements about the impact of advertising on price elasticity when we examine the work done by other researchers in marketing. Using cross-sectional and time-series data, Wittink (1977) found a positive relationship between advertising and price elasticity, consistent with the information approach. Other researchers who have also drawn similar conclusions, i.e., that advertising increases price sensitivity, have not measured price elasticity in response to advertising, but have examined price sensitivity through price advertising interactions (Eskin 1975; Eskin & Baron

1977; Prasad & Ring 1976). Eskin & Baron, for example, report a negative interaction between advertising and price, i.e., the simple effect of price on quantity sold increased with an increase in advertising. They interpret this to mean greater responsiveness (higher price elasticity) to price when advertising is increased. However, the elasticity of demand depends not only on the slope but also on the original position on the curve. Thus it is not possible, simply by observing a negative interaction between price and advertising, to make general statements about changes in price elasticity in response to advertising. It is easy to imagine situations in which price elasticity might decrease, even though the analysis of variance tests show a negative interaction, as was observed in the Eskin & Baron study. A related problem stems from the disguised nature of the data employed by these researchers. To preserve confidentiality, Eskin and Baron applied a positive linear transformation to their sales data. Such linear transformations on the data will not affect the price-advertising interaction, but the elasticities will be affected. Due to these factors, it is difficult to make valid generalizations about the effect of advertising on price elasticity from an examination of price advertising interactions.

   Limitations. Past research into the effect of advertising on price sensitivity suffers from certain limitations. The evidence appears to be mixed, but the lack

of comparability across studies on the conceptualization and design makes it impossible to generalize from such evidence. Part of the problem arises from the lack of consistency among authors in what they mean by 'advertising.' Variations in advertising content, which might have a potential effect on price sensitivity, have not been considered (Albion & Farris 1980,1981; Lambin 1976). As we shall see in the following sections, advertising messages are not identical, and different types of advertising can be expected to have potentially different effects on price sensitivity. In light of this, it is meaningless to view advertising as a homogeneous activity and hypothesize its potential effect on price sensitivity without regard for the variation in content. The use of different types of dependent measures of price sensitivity with respect to advertising (e.g. price-advertising interactions or price elasticities) might also account for part of the conflicting evidence.

Second, the causal relation between advertising and a measure of market power such as price elasticity is also a controversial point (McAulife 1987). A correlation between advertising and price elasticity does not prove that advertising is the cause of an increase or decrease in price elasticity, especially because such correlational studies have not controlled for other possible causal factors. Even if a causal relationship exists, it is not clear what the direction of causality is, since it has also been shown that

the optimal level of advertising depends on the price elasticity of demand (Dorfman & Steiner 1954). Studies done in the econometric tradition, which seem to support the monopoly view of advertising (e.g., Comanor & Wilson 1974; Lambin 1976), did not explicitly control for extraneous variables that might have had a potential effect on the results. In the absence of a controlled experiment specifically testing for the relationship, it is not possible to make any statement about its causal nature. Other researchers who have used controlled field experiments (Eskin & Baron 1977; Krishnamurthi & Raj 1985) could possibly make claims about causality. But in the absence of controls factors such as advertising content and the stage in the product life cycle, which could have a potential effect on the results obtained, they too have not been able to provide conclusive evidence about the causal relation between advertising and price elasticity.

A Conceptual Framework

This section presents a generalized conceptual framework for examining the relationship between advertising and price sensitivity. In this dissertation, price sensitivity is to be measured directly by examining price elasticities. An attempt is made to establish a _causal_ link between consumer responses to advertising and the resulting price sensitivity; this is to be experimentally tested under controlled

conditions. This approach will consider the possible ways in which different kinds of advertising (primarily varying in content) affect consumer responses to advertising and the resulting price sensitivity.

It is suggested that if the objective is to better understand the causal relationship between advertising and price sensitivity, an appropriate focus of study could be consumer choice as a function of price sensitivity. Hence the question, properly framed, is: how does advertising affect consumer choice? Various choice models and mechanisms have been suggested in the literature (Corstjens & Gautschi 1983; Hutchinson 1986). One particular theoretical formulation of the choice process (Nedungadi 1987) is very insightful in this context, where the primary focus is on how advertising influences price sensitivity through its effect on consumer choice. In this model, brand choice is conceptualized as a two-stage process. In order to be selected, a brand must (a) first be included in the consumer's consideration set and (b) be preferred to others in the set. In other words, an alternative must first be brought to mind and actively considered and must also be perceived to offer the maximum utility among all members of the set. It follows that the probability of a brand being finally chosen can be changed by influencing its inclusion in the consumer's consideration set or by altering the perceived utility of that brand relative to others in the set.

Lynch and Bloom (1987) use this conceptualization of choice in their proposed framework for examining the effects of advertising on consumer price sensitivity. They suggest that advertising could influence the probability of choice by determining the size of the consumer's <u>consideration set</u>. Advertising that increases the probability of inclusion of the advertised brand in the consideration set increases the size of the set, and advertising that inhibits the probability of simultaneous inclusion of competing brands, reduces the size of the consideration set. In short, advertising could have either a positive or negative effect on the size of the consideration set. All else equal, the elasticity of demand for any given brand to changes in its price will be greater the larger the number of brands that are simultaneously considered.

Advertising could also potentially influence the dispersion of <u>brand-utilities</u>. It could increase the perceived utility for the sponsored brand and decrease the perceived utilities for competing brands. Advertising could change perceptions about market offerings or alter the criteria consumers use to evaluate products. In this way, by changing the consumer's preferences for the various alternatives, advertising could have a positive or negative effect on the probability of choosing the advertised brand.

Advertising-induced Changes in the Size of the Consideration Set

The consideration set consists of the group of brands that the buyer actively considers when making a choice (Campbell 1969). These brands become the alternatives in the buyer's choice decision. It has been suggested (Alba and Chattyopadhay 1985; Hauser & Wernerfelt 1990; Nedungadi 1987) that the consumers faced with an assortment of brands attempt to concentrate on a subset of alternatives in order to gain efficiency in shopping. Therefore, marketers need to organize their efforts in such a way that their particular brand is included in the consumer's consideration set. The consideration set is a dynamic entity varying over different types of choice situations (Nedungadi 1987). Thus, the marketer's task involves more than simply ensuring consumer awareness of the brand's existence; the brand has to be retrieved and considered at the time of choice. Advertising could ensure that the advertised brand is included and also prevent simultaneous inclusion of other brands. Thus advertising could have a positive or negative effect on the size of the consumer's consideration set.

In the real world, there are many instances of an advertiser attempting to place the sponsored brand in the consumer's consideration set. For example, reminder advertising often attempts to provide retrieval cues at the time of choice (Keller 1987). Such efforts might ensure that the advertised brand is included in the consumer's

consideration set. Empirical research has also shown that advertising for a brand can substantially inhibit the recall of competing brands (Alba & Chattyopadhyay 1986). This has important implications for situations in which an alternative has to be remembered to be considered. For example, when consumers decide which stores they want to patronize, all the alternatives are not arrayed in front of them. Thus, they have to retrieve relevant information from memory. In this case, if advertising for a few stores dominates the media, these stores are likely to be salient in the consumer's mind relative to unadvertised stores. In this way, advertising might ensure inclusion of the advertised brand for consideration and thus influence the choice decision by altering the size of the consideration set (Silk & Urban 1978).

The effects of advertising on consumer decisions allow us to derive its implications for revealed price sensitivity. If price is considered to be an argument in a multi-attribute utility function (Huber et al. 1986), then all other things being equal, the greater the number of brands in their final consideration set, the more price sensitive consumers are likely to be (Lynch & Bloom 1987). Thus, if advertising increases the size of the consideration set by ensuring inclusion of advertised brands, it leads to increased price sensitivity. This implies that advertising for a particular brand leads to increased price sensitivity for competing

brands that are already included in the consideration set. Advertising for a brand might also inhibit the inclusion of potential competitors in the consideration set and thereby result in reduced sensitivity to changes in its own price. These changes in consumer price sensitivity caused by advertising are mediated by the size of the consideration set. In this study, all brands are advertised and therefore the institution of advertising results in an increase in the size of the consideration set.

From the preceding discussion it is clear that the consideration set is an important construct for examining the effect of advertising on consumer choice. One possible way in which advertising could influence consumer price sensitivity for the advertised brand is simply by changing the size of the consideration set in which this brand is included. The effects just described are purely the result of memory factors. The next section discusses changes in price elasticity that result from advertising-induced changes in preference.

Advertising-induced Changes in Preference given Inclusion in the Consideration Set

Economic analysis generally treats advertising as a homogeneous activity that is evaluated independently of why it might increase demand (Leffler 1982). Yet, the effect of advertising need not be the same in different markets or in different situations within a market. For example, price

comparison ads of standardized products might increase price sensitivity both by providing more information as suggested by economic analysis and by the behavioral mechanism of increasing salience of price and inhibiting the salience of non-price attributes (Bettman & Sujan 1987; Feldman & Lynch 1988; Lynch & Bloom 1987). 'Image' advertising of heterogeneous, differentiated products might reduce price sensitivity by increasing the importance of non-price attributes in the consumer's utility function. Hence, an examination of this relationship should be prefaced by the particulars of the products advertised and the message delivered by the ad. If advertising is a multifaceted, heterogeneous activity, general statements as to the economic effects of advertising might not be possible or interpretable. Rather, it would be more reasonable to examine systematically conditions under which advertising can be expected to have a positive or negative effect on price sensitivity.

In the economic literature (and even in the marketing literature which has attempted to examine price-advertising interactions), the content of advertising has never been considered. Rather, the amount of advertising has been emphasized. However, perhaps the content of advertising is what is important in terms of its potential effect on price sensitivity, and this is an important factor to be considered in the examination of this relationship (Albion & Farris

1981; Lambin 1976). It may be meaningless to judge the information potential of advertising on consumer behavior without regard to its content. In this regard, it would be too simplistic to postulate, as some economists (Nelson 1970, 1974, 1978) have done, that all advertising is informative rather than manipulative or persuasive, because this assumes that consumers have fixed preferences and the only objective of the ad is to provide functional information. Based on evidence from the behavioral literature, some authors suggest that an ad for a brand can change perceptions of the product and hence can affect the probability of choice (Alba & Hutchinson 1990; Bettman & Sujan 1987; Hoch & Ha 1986; Lynch & Bloom 1987).

As noted above, the probability that a consumer chooses a particular brand depends upon his/her preference or utility for the brand relative to competing alternatives (Cortsjens & Gautschi 1983; Nedungadi 1987). Research on consumer preferences and attitudes has relied heavily on the use of multi-attribute models. Within the general paradigm of multi-attribute models, one can envision several possible ways in which an attitude toward a particular brand can be changed (Lutz 1975; Wilkie & Pessemier 1973). Basically, these models postulate that individuals' attitudes toward a brand is some function of their beliefs about the extent to which the brand possesses certain attributes, and their evaluation of the importance of these attributes. Thus,

attitudes are construed as a linear combination of brand beliefs and importance-weights on certain attributes.

Marketers often attempt to use advertising to increase the perceived utility for the sponsored brand. One of the key benefits of the multi-attribute approach is that it offers useful guidance in this regard. Consumer researchers suggest several advertising strategies which can improve consumer attitudes toward the advertised brand relative to competitors (Boyd et al. 1972; Lutz 1975). In line with the theoretical formulation stated above, all these strategies attempt to improve consumer preferences for the advertised brand in one of the following ways: (a) by changing existing beliefs about the brand or competing brands, (b) by increasing the importance of an attribute on which the brand is strong, (c) by decreasing the importance of a weak attribute, and (d) by adding an entirely new attribute (Boyd et al. 1972).

In the preceding paragraphs, the various possible ways in which advertising might change consumer preferences for the sponsored brand have been outlined. This leads to an increased likelihood of it being chosen, if it is already included in the consideration set. This is likely to have implications for price sensitivity. The mechanisms by which they could occur are discussed below.

First, advertising for the sponsored brand could change the distribution of preferences and create a situation in

which the ordering of preferences is not sensitive to changes in price. The greater the dispersion in the consumers' mind among the utilities of the alternative brands, the less price elastic should be their demand for any individual brand. Advertising might lead to some brands being perceived to be clearly superior relative to others. In other words, advertising, by increasing the perceived utility for the advertised brand relative to that of competing brands, might lead to a lower price elasticity for the sponsored brand.

A second way in which advertising might potentially reduce price sensitivity is by increasing the salience of non-price attributes and thereby decreasing the importance of price. Thus, advertising can cause consumers to 'frame' their choices in terms of the evaluative criteria suggested by advertisers (Alba & Hutchinson 1990; Bettman & Sujan 1987; Hoch & Deighton 1989). It has been reported that increasing the salience of product attributes suppresses the ability to recall unmentioned attributes (Alba & Chattyopadhyay 1985). Also, by increasing the salience of a particular attribute, advertising might ensure that this attribute is used in subsequent evaluations, and thereby increase the effective weight given to that attribute (Feldman & Lynch 1988). Taken together, this suggests that advertising, by increasing the salience of non-price attributes, could lead to decreased price sensitivity.

The preceding paragraphs have discussed the role of advertising on consumer price sensitivity mediated by altered preferences as a result of advertising. It has been pointed out that advertising could lead to decreased price sensitivity for the advertised brand either by enhancing the importance of non-price attributes in consumer choice or by changing the perceived overall utility for that brand and the difference in utility between that brand and the consumer's most preferred brand. Some authors suggest that this would be less true for consumers with higher levels of expertise (Alba & Hutchinson 1990; Lynch & Bloom 1987)

Interplay between Advertising-induced Preference and the Consideration Set

The framework so far has conceptualized the impact of advertising on price sensitivity as being mediated by changes in either the size of the consumer's consideration set or the perceived utilities of various brands. From this perspective of the choice process and the role advertising plays in it, it might seem as if the size of the consideration set is independent of consumer preferences for the competing alternatives. However, the perceived utilities of the different product offerings, aside from having a direct effect on price sensitivity, might also limit the size of the consumer's consideration set.

Through the direct effect on preferences, advertising might also have an indirect effect on the size of the

consideration set. Ad-induced changes in utility may cause some alternatives to become dominated and, therefore, removed from the consideration set. In other words, advertising, by changing brand preferences, might determine the number and type of brands that the consumer considers at the time of choice. Advertisers often attempt to differentiate the product on certain advertised dimensions. The increased salience of this differentiating attribute might lead to a greater attention being given to that attribute at the time of choice (Gardner 1983). The prominence given to the attribute might have an effect on the choice heuristic employed by consumers. If noncompensatory choice processes are modelled as though it were compensatory, this would affect the revealed importance of the attribute (Johnson & Meyer 1984).

The market power view of advertising asserts that advertising differentiates products and creates a situation in which the advertised brand is perceived to have few close substitutes. This might be taken to imply that when the advertised brand is included in a consumer's consideration set, few other brands are simultaneously included. This is because the perceived benefit from including additional brands in the consideration set will be less when some clearly preferred brand is already included (Hauser & Wernerfelt 1990). Since price sensitivity is a function of the perceived substitutability among brands, differentiating

advertising, by changing preference structure, reduces the size of the consideration set. This leads to decreased price elasticity. In this case, it might also affect the composition of the set, such that the variance in utilities for brands in the consideration set is less than the variance for all brands in general. This might imply higher cross-price sensitivity for brands included in the consideration set.

In this section, the interdependence between preference and the size of the consideration set was discussed. Advertising, by changing the relative utilities for the various product offerings, is likely to alter the size and composition of the consideration set, which in turn has implications for price sensitivity.

Summary

Prior conceptualizations regarding the relationship between advertising and consumer price sensitivity have been too simplistic in that they have looked for main effects of advertising. Thus the literature remains confusing and the disputes unresolved. It is proposed that we can arrive at a better understanding of the phenomenon by looking at higher-order interactions involving many other factors and a more sophisticated treatment of consumer choice behavior.

The proposed framework discussed above attempts to isolate various possible causal mechanisms by which advertising affects consumer price sensitivity by affecting

the awareness of substitutes and the ability to remember substitutes of which one is aware. First, it might change the size of the consideration set by affecting the awareness of substitutes and the ability to remember substitutes of which one is aware. Second, it might alter preferences for the advertised brand given inclusion in the consideration set. Third, it might also reduce the size of the consideration set through preferential mechanisms. The greater the variance in utilities, the less the incentive to consider brands other than one's most preferred ones, in the hope that a price discount for a less-liked brand would cause it to be preferred to the normally favored brands.

The next chapter details an experiment that is designed to empirically test the concepts discussed in the framework.

CHAPTER III

AN EMPIRICAL INVESTIGATION OF THE IMPACT OF ADVERTISING
ON PRICE ELASTICITY: CONCEPTUAL HYPOTHESES AND STUDY DESIGN

Objective

This study attempted to examine the relationship between advertising and price sensitivity mediated by two key constructs: the size of the consideration set and the dispersion of brand-utilities.

Background

The Consideration Set

Consumers are faced with a multiplicity of alternatives in course of making their regular purchase decisions. In each product category, consumers are aware of a large number of brands and have to make their choice from among these brands. To simplify their decision making, they must make their selection from a smaller group of brands (Alba & Chattyopadhyay 1985; Hauser & Wernerfelt 1990; Nedugadi 1987;). In other words, the consumer's final choice is made from the consideration set--a certain subset of alternatives from the total number of options available in the market. This definition is similar to the 'evoked set' notion used by marketing researchers (Campbell 1969; Howard & Sheth 1969; Narayana & Markin 1975; Parkinson & Reilly 1979).

The concept of a consideration set is important for the understanding of consumer choice. First, it emphasizes that mere awareness of a brand is not sufficient for it to be a candidate in the consumer's final choice set. The brand has to be actively considered at the time of decision making. The brands that consumers consider at the time of choice form a small subset of the total number of alternatives of which they are aware (Silk & Urban 1978). Second, the consideration set is not a static entity. Of course, research in consumer behavior has often implicitly assumed that the consumer chooses from a fixed set of brands. Typically, consumers are presented with a set of brands and information about them, and are asked to make a choice or to indicate their preferences (Lynch & Srull 1982). But in practice, the size and composition of the consumer's consideration set is determined by certain voluntary and involuntary factors. The size of the consideration set is a positive function of the consumer's ability and motivation to retrieve and consider a certain number of brands for evaluation at the time of choice. Thus anything that positively affects the ability of the consumer to retrieve brands from memory will increase the size of the consideration set, and factors that negatively affect this ability will tend to reduce the size of the consideration set. Similarly, factors that alter the motivation of the consumer to retrieve information from memory will have an

effect on the size of the consideration set. For example, the inclusion of highly preferred brands in the consideration set is likely to reduce the motivation to consider additional brands for evaluation and choice. This will reduce the size of the consideration set and also affect its composition. Hence the consideration set is likely to vary over time, depending on whether factors that are present when the choice is made result in an increase or decrease in the ability and motivation to retrieve brands for consideration.

Presence or Absence of Advertising

Advertising for the brand is an important factor that can influence brand choice by affecting the ability and the motivation to place the sponsored brand in the consideration set. In today's competitive environment, the consumer is faced with an assortment of brands and has to focus on a subset of brands in order to gain efficiency in shopping. Under such a scenario, marketer-controlled advertising can serve important purposes that help consumers make the choice decision from among the numerous alternatives that they encounter.

This study will consider the effects of the institution of advertising on price elasticity. In other words, this research will compare the case when none of the brands advertise to that when all brands engage in advertising.

Reminder advertising. First, advertising can result in keeping the sponsored brand salient in the consumer's mind.

The ability to recall a brand depends on the accessibility of the brand in memory. It has been noted earlier that mere awareness of the brand is not enough for it to be considered at the time of choice. In order to be chosen, the brand must be retrieved from long-term memory and included among the subset of alternatives that comprise the consumer's consideration set. Advertising for even well-known brands keeps the brand salient in the consumers mind and increases the probability that it would be retrieved at the time of choice (Hauser and Wernerfelt 1990; Silk & Urban 1978;).

Consider a situation in which the marketers use advertising for their brands, but the advertising is of a reminder nature. That is, its major objective is to keep the brand name accessible in memory, and thereby increase the probability that the sponsored brand is included in the consumer's consideration set. In fact, some authors note that in many instances, the aim of advertising is to place the brand in the consumer's evoked set (Wilkie & Farris 1976, Wittink 1977). Though the evoked set they are referring to is more akin to an 'awareness set', it is possibly true that keeping the brand salient in the consumer's mind through reminder advertising also enables it to be considered at the time of choice. In other words, reminder advertising provides retrieval cues at the time of choice, and thereby increases the size of the consideration set.

As stated in the earlier section, this study will consider the effects of advertising when all brands are advertised. If <u>all</u> firms pursue this strategy, there should not be any inhibition effects resulting from the salience of a few brands in memory as has been observed by some researchers (Alba & Chattyopadhyay 1986). In such a case, reminder advertising of all brands will increase the salience of brands in memory and thereby increase the size of the consideration set.

<u>Differentiating advertising</u>. Marketers might also try to use advertising to differentiate their brands from competitive offerings and thereby reduce the number of perceived substitutes. In the real-world, advertising is often used to position a parity product away from substitutes with the objective of insulating the brand from competition. This type of advertising leads to an increase in the dispersion of brand-utilities among the alternatives in the consideration set. In other words, differentiating advertising will result in some brands being perceived to be clearly superior to others and thereby increase the probability of these brands being chosen (Hauser & Wernerfelt 1990).

If the focus was on the variations in a single brand's advertising, this could either increase or decrease interbrand variance of interbrand utilities. For example, if the top brand advertises, then this increases variance of

utilities. If a less attractive brand advertises, this will decrease the variance. In this study, all brands advertise. Under such a scenario, information contained in differentiating advertising will result in an increase in the dispersion of utilities compared to the situation when none of the brands advertise.

Besides affecting preferences for the brands in the consideration set, differentiating advertising can affect the size of the consideration set itself. As noted earlier, consideration set size is a function of not only the ability, but also the motivation of the consumer to retrieve brands from memory. Differentiating advertising might be expected to positively affect the ability to retrieve brands by keeping brand names salient in memory. Thus, compared to the situation in which none of the brands are advertised, differentiating advertising, by increasing the ability to recall brand names, is expected to increase the size of the consideration set.

However, by directly affecting the distribution of perceived utilities for the various brands, differentiating advertising is also likely to have an indirect negative effect on the motivation to retrieve brands for consideration. The higher the utility from the best brand in the evoked set, the less likely is the consumer to consider a new brand (Hauser 1989). Thus, by increasing the utilities and the variation in utilities of brands in the consideration

set, differentiating advertising is likely to reduce the consumer's motivation to retrieve brands for consideration at the time of choice.

The Decision Environment

The environment in which the choice is made has a potential role in moderating the effects of advertising on the consideration set and the dispersion of brand-utilities. Decision environments differ in terms of the degree to which the consideration set is driven by external factors such as salesperson's recommendations or point-of-purchase display, or by the information that the consumer has to access from memory.

Consider the case of the consumer who is deciding on the store at which to shop. Decisions such as this are necessarily memory-based. Consumers do not have all the alternatives available to them at the time of choice, and therefore must retrieve the information from memory. This is the pure 'memory-based' choice situation, in which the environment does not provide any of the relevant information (on brand names or attributes) at the time of choice, and the consumer has to retrieve the information from memory.

There are other situations in which the consumer could rely on external cues (in whole or in part) for the generation of alternatives. For example, consider the consumer walking down a supermarket aisle. In this situation, the consumer has brand and attribute information

on all the alternatives readily available at the time of choice. In such a case, the environment is providing all the information relevant to making the decision. This is what we term 'stimulus-based' choice environment. In such a situation, the consideration set is likely to be determined by external cues provided by the environment, e.g., price rebates or end-aisle display.

Even in the case of stimulus-based choices, as in our supermarket example earlier, it may be argued that the consumers do not spend their time exhaustively considering all possible alternatives. Even in such situations which are in principle, purely stimulus-based, it is contended that memory factors play a crucial role (Alba et al. 1990). Research in consumer behavior (Hoyer 1984; Park et al 1989) suggests that consumers do not engage in elaborate processing of package information at the time of choice. Thus it is likely that consumers retrieve relevant information from memory in order to concentrate on a subset of alternatives and thus gain efficiency in shopping.

In short, for certain decisions, consumers might have to retrieve information from memory in order to evaluate and choose from a candidate set of brands. In other situations, they could rely on external cues to some extent. The more the consumer relies on external cues to guide choice, the more the decision is said to be stimulus-based. But, as

noted earlier, the pure stimulus-based choice decision is a rare phenomenon.

In this context, it would be useful to distinguish between memory-based versus stimulus-based specification of attributes and brands. The few studies (Alba & Marmorstein 1987; Biehal & Chakravarti 1983,1986; Lynch et al. 1988) which have considered memory-based decision making have assumed that brand names are given and that relevant information on attributes must be accessed from memory. This is representative of situations in which consumers are shopping from store to store, where not all the attribute information is available in front of them, and they have to retrieve relevant information about the brands from memory in order to make a judgment or choice. But there are other situations in which even the brand name has to be generated from memory, irrespective of whether the attribute information is readily available or not. As noted above, the consumer might be faced with a variety of choice environments which offer different types of information at the time of decision making.

Implications

Whether the choice is stimulus-based or memory-based has implications for the alternatives considered and the informational inputs that are used in decision making (Nedungadi 1987). When the choice is memory-based, the size of the consideration set will depend on the consumers'

ability and motivation to retrieve brands from memory. If there is no advertising for the various brands, then the consideration set in a memory-based choice situation depends purely on the consumer's capacity to retrieve brand alternatives. Hence the size of the consideration set is likely to be smaller in the memory-based environment than in the stimulus-based environment.

When the decision is such that brand names have to be remembered to be considered, the consumer has to rely on memory to retrieve brands for consideration. Therefore marketers try to organize their efforts in such a way that their particular brand is considered at the time of choice (Narayana & Markin 1975). Thus, under memory-based situations, reminder advertising will lead to an increase in the ability to recall brands and thereby increase the number of brands considered for choice. If all firms pursue this strategy, there should not be any inhibition effects resulting from the salience of a few brands in memory as has been observed by some researchers (Alba & Chattyopadhyay 1986).

Differentiating advertising has a positive effect on the ability to recall brands and can therefore increase the size of the consideration set. But this type of advertising is also likely to negatively affect the motivation to recall brands for consideration. In other words, if this type of advertising results in some brands being perceived as clearly

superior to others, it is unlikely that consumers will attempt to include clearly dominated alternatives in their consideration sets. Research in consumer behavior has shown that more preferred brands are likely to be more easily retrieved, simply because preference leads to brand usage and the rehearsal that this produces increases the brand's accessibility in memory (Nedungadi & Hutchinson 1985). Thus consumers are more likely to retrieve brands that they perceive will provide the maximum utility (Hauser & Wernerfelt 1990). Therefore, the size of the consideration set is likely to be negatively related to the perceived superiority of the brands retrieved initially. Hence, in memory-based choice situations, differentiating advertising, if it leads to changes in brand perceptions and preferences, might lead to a reduction in the size of the consideration set.

When choice is stimulus-based, the environment provides the relevant information, and reminder advertising is not as important a determinant of the size of the consideration set. This is because the reminder function of advertising is not expected to be crucial in helping the consumer decide on the brands to consider before making a choice. However, it should be recognized that many real world choice environments in which stimulus information is available, consumers ignore it and make decisions based on memory.

Differentiating advertising will lead to an increase in the variance of interbrand preferences. This is likely to lead to a reduction in the size of the consideration set if consumers concentrate on the highly preferred alternatives in order to gain efficiency in shopping.

Advertisers use differentiating advertising to alter preferences for the various brands. Consumers might use the criteria provided in the ad for the purpose of evaluation and choice (Bettman & Sujan 1987; Gardner 1983, Hoch & Deighton 1989). Such 'framing' effects are likely to limit the size of the consideration set. Thus, in stimulus-based situations, a differentiating advertising strategy might lead to greater attention being devoted to certain attributes, thereby changing the composition of the consideration set. For example, the consumer might use a particular attribute in order to eliminate alternatives, and the members of the final consideration set might be similar on that particular attribute.

The greater the number of brands in the consideration set, the greater is the price sensitivity, because the existence of a greater number of substitutes decreases the utility gap between the most preferred brand and its competitors thereby increasing the elasticity of demand to price cuts by the latter (Lynch & Bloom 1987). The positive effect of advertising on price sensitivity will be larger if consideration set sizes in the absence of advertising were

smaller. That is, if advertising increases consideration set sizes from 2 to 3, this will have a more dramatic effect on price elasticity than if it increases consideration set sizes from 4 to 6. Thus, under memory-based choice situations, reminder advertising, which increases the size of the consideration set, tends to increase price sensitivity, and differentiating advertising, which reduces the size of the consideration set, tends to decrease price sensitivity. Differentiating advertising for brands will also increase relative preference for some and thus have a negative effect on price sensitivity.

Even when advertising has no effect on the size of the consideration set, it can lead to an increase in the dispersion of brand-utilities. Advertising that seeks to convey attribute information and thereby differentiate the sponsored brand from close substitutes often results in changing the relative overall preference for the various brands. The larger the variance in utilities, the larger is the price discount necessary to change purchase patterns. Therefore differentiating advertising would be expected to increase the dispersion of brand-utilities and thus lower the price elasticity in the stimulus-based choice environment.

Assumptions

1 Holding constant the size of the consideration set, price elasticity is inversely related to the dispersion of brand-utilities.

2. Price elasticity is a positive function of consideration set size.

3a. Differentiating advertising conveys more utility-relevant information than reminder advertising. Thus, it can be expected to have greater effects on interbrand variance in utilities than reminder advertising.

3b. Reminder advertising will have minimal effects on the interbrand dispersion of utilities compared to a situation of no advertising.

4. The size of the consideration set is a function of certain voluntary and involuntary factors. It is positively related to the ability and motivation of the consumer to retrieve a certain number of brands from memory. Anything that increases (decreases) the ability or the motivation to retrieve brands for consideration will increase (decrease) the size of the consideration set.

5. Both reminder and differentiating advertising can facilitate retrieval of brands.

6. When the environment provides the names of all relevant brands (stimulus-based environment), the primary effect of advertising on the consideration set will be through its effect on the dispersion of preferences.

Specifically,

6a. Reminder advertising of all brands will not have a significant effect on the size of the consideration set

to the extent that it will have minimal effects on the dispersion of brand-utilities.

6b. Advertising that seeks to differentiate the brands serves to change brand-utilities and the inter-brand variance of utilities, and thereby reduce the size of the consideration set.

7. When the consumer must remember the names of all relevant brands (memory-based environment), there will be a large simple effect of advertising on the size of the consideration set.

Specifically,

7a. Consideration set sizes will be larger when advertising is of a reminder nature than if no brands advertise.

7b. Consideration set sizes will be smaller when all brands use differentiating advertising than if no brands advertise.

8. Average size of the consideration set will be larger when choice is stimulus-based than when choice is memory-based.

Hypotheses

H1. When choice is stimulus-based, price sensitivity will be greater than when choice is memory based.

H2. When choice is stimulus-based, the only effect of advertising on price sensitivity is through a change in perceived utilities of the various brands.

H2a. When choice is stimulus-based, differentiating advertising will result in decreased price sensitivity compared to a situation of no advertising.

H2b. When choice is stimulus-based, there will be no significant effect of reminder advertising on price sensitivity compared to a situation of no advertising.

H3. When choice is memory-based, there will be a significant effect of advertising on price sensitivity.

H3a. When choice is memory-based, advertising that seeks to differentiate the brand from competing brands will result in decreased price sensitivity compared to a situation of no advertising.

H3b. When choice is memory-based, reminder advertising of all brands will result in greater price sensitivity compared to a situation of no advertising.

Overview of Research Methodology

Three experiments were designed to test the hypotheses concerning advertising and price elasticity, mediated by the two constructs of interest, namely, size of the consideration set and the dispersion in preferences for the various brands. The first two experiments served as pretests for Experiment 3 which examined the effect of advertising on price elasticities. In order to help the reader understand the issues in the design of Experiment 3 that Experiments 1 and 2

were intended to resolve, a brief overview of Experiment 3 is provided first.

<u>Design</u>

This section presents the overall methodology employed in the Experiment 3, which utilized a computer-based shopping simulation. Three factors were manipulated in the experiment. A 2X3X12 design was used, with Decision Environment (Stimulus-based / Memory-based) and Advertising Condition (Differentiating / Reminder / No Ads) as between-subjects factors. Prices of twelve brands were manipulated (High / Low) within-subjects, independently of each other, allowing independent estimation of the price elasticities of the 12 brands. These price elasticities served as the primary dependent measures. Subjects participated in groups of one to four, with each group being randomly assigned to one of the six cells of a 2X3 between-subjects design.

<u>Procedure</u>

Subjects were initially exposed to attribute information on twelve brands of Canadian candy bars that were previously unfamiliar to them. After demonstrating by a recognition task that they were 'aware' of the brands, they were dismissed. They came back to the laboratory at a later point in time, when they were required to go on 16 shopping trips for candy bars.

The subjects' objective on each of the 16 shopping trips was to maximize satisfaction given a budget of $3.00 per

trip. Their task was to allocate the amount among candy bars of their choice. They were told that the prices of the various brands would change from one shopping trip to another. Subjects were also told that they would actually receive the candy bars purchased on one of these sixteen shopping trips. These aspects of the design and procedure were the same for all subjects.

Experimental Factors

Advertising condition. The type of advertising was manipulated at three levels. Subjects in the differentiating advertising condition saw ads for all twelve candy bars. These ads provided information on brand attributes and were predicted to change subjects' relative preference for the brands compared to a situation where none of the brands were advertised. Subjects in the reminder ad condition saw ads that provided information on the package and brand name, similar to some print or billboard advertising. These ads were predicted to increase the likelihood of inclusion of the advertised brand in the consideration set but to have minimal effect on preferences. Subjects in the no advertising condition served as a control group, and were not exposed to any ads for the candy bars prior to going on the 16 shopping trips.

Decision environment. The decision environment was manipulated at two levels. Subjects in the stimulus-based choice condition were provided with a list of all twelve

brands to use during shopping trips. They could therefore use this list to decide which brands to examine for price information and purchase. This was intended to reflect real-world situations in which the aisle display or a salesperson reminds the consumer of the set of brands that might actually be purchased.

Subjects in the memory-based choice condition did not have such a list available to them. These subjects could only search for price information on brands that they were able to recall on their own. Therefore they could only purchase brands that they could retrieve from memory. This manipulation was intended to reflect real-world decision situations in which the consideration set is typically generated from memory.

Chapter IV describes the pretests (Experiments 1 and 2) that tested some assumptions arising from the above discussion. Chapter V details the methodology employed in Experiment 3 to test the hypotheses on the impact of advertising on price sensitivity. Chapter VI presents a discussion of the results of Experiment 3. Chapter VII develops the implications of these findings for research in consumer behavior.

CHAPTER IV

PRETESTS

Overview

The hypotheses developed in the last chapter concerned
how two basic theoretical constructs mediate the effects of
advertising on price elasticity. These two mediating
variables are the size of the consideration set and the
dispersion of brand-utilities. It was argued that
advertising could lead to an increase or decrease in the size
of the consideration set, with resultant effects on price
elasticity. Also, advertising that seeks to differentiate
brands will increase the variance in perceived utilities for
the various brands and thereby lower price elasticity.

This chapter discusses two pretests which were designed
to examine the effect of advertising on the ability and
motivation to consider brands for evaluation and choice.
These experiments were expected to provide insights on the
hypothesized mediating roles of the theoretical constructs
discussed in the framework. The following specific issues
were investigated:

1. the effects of advertising on the number of brands
    recalled;

2. the effects of advertising on the number of attributes
    recalled;

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3.   the effects of advertising on interbrand differences in
     preference;

4.   the effects of advertising on price perceptions;

5.   the effects of advertising on interbrand differences in
     perceptions.

Experiment 1

This sections details the above mentioned issues and the
predictions that were tested in the first experiment.   The
subjects, the methodology and the stimuli are discussed.   The
results of the pretest are also presented.

Key Issues Investigated

The issues that were investigated in these pretests are
presented below.

Effects of advertising on the number of brands recalled.
It has been suggested in this paper that one of the major
roles of advertising is to remind, i.e., to provide recall
cues in order to ensure that the brand is retrieved for
evaluation.   The reminder function of advertising becomes
especially important in situations in which the brand has to
be remembered to be considered.   Advertising is expected to
have a significant effect on the number of brand names
recalled in the memory-based decision environment.   In the
absence of advertising, subjects have to rely on memory to
recall brand names for consideration.   Advertising (both
reminder and differentiating) can therefore be expected to

increase the ability of the consumer to recall brand names by making them more accessible. Both differentiating and reminder advertising are likely to have similar effects on free recall of brand names. On the basis of the above discussion the following prediction was made:

P1. There will be a significant effect of advertising on the number of brand names recalled correctly.

Thus the proposition tests for significant differences in memory for brand names when subjects are exposed to advertising compared to the situation in which none of the brands are advertised.

In the last chapter it was hypothesized that under memory-based decision environments, reminder advertising will increase the size of the consideration set. For such an effect to hold, it was important to ensure that even though subjects were aware of the brands, the names were not readily accessible in memory. If the above proposition is supported, it implies that advertising could be expected to enhance the ability to recall and thereby influence the size of the consideration set.

Effects of advertising on the number of attributes recalled. It is often suggested that advertising is a source of valuable information on brand attributes. If this is true, then differentiating advertising, besides providing cues for brand name recall, will also result in making attribute information more salient in memory. In the absence

of advertising, subjects will have to rely on the initial (product and package) information on the various brands in order to retrieve attribute information from memory. Differentiating advertising, if it provides brand attribute information should increase the ability to recall brand attribute information and thereby have a positive effect on the number of attributes recalled correctly. Therefore the following predictions were made:

P2a. Differentiating advertising will result in a greater number of attributes recalled compared to a situation of no advertising.

P2b. There will be no significant effect of reminder advertising on the number of attributes recalled correctly.

Thus this prediction tests for differences in the salience of brand attribute information across the three advertising conditions. It was expected that such information was likely to form the basis of perceived utility differences across the brands.

It was postulated in this paper that differentiating advertising will lead to an increase in the dispersion of brand-utilities. As stated earlier, perceived utilities for various brands are likely to be a function of the information that is available at the time of choice. Subjects in this experiment had access to two sources of brand-attribute information.

All subjects were exposed to some basic product and package information about the various brands before they saw any ads. This was intended to stimulate real-world situations in which subjects typically have access to information sources other than advertising. Therefore the purpose of providing the initial information was to give subjects a preliminary basis for forming relative preferences among brands. This was considered to be especially important for subjects who were not to be exposed to advertising. Otherwise, these subjects would have no basis for choice (from novel brands) other than price. Afterward, subjects in the two advertising conditions were exposed to advertising, which was the second source of information about the brands.

However, if subjects in the no-advertising condition had perfect recall of the initial attribute information that they were exposed to, they were more likely to have a well-defined preference ordering for the brands. In such a situation, advertising would be less likely to result in significant increases in the dispersion of brand-utilities. In short, for advertising to have the desired effects on the size of the consideration set and preferences, it was considered important that there should be differences among the three advertising conditions in terms of the information that is accessible.

Effects of advertising on interbrand differences in preference. Advertising conveying information that produces

(real or image-based) differentiation among brands was postulated to have an effect on the relative overall preferences. Specifically, differentiating advertising is likely to make perceived utilities of the brands more variable, resulting in some being perceived to be clearly preferred to others. For example, it is likely that advertising will increase the utility difference between the most preferred brand and the next preferred brand. Reminder advertising was not expected to have significant effects on interbrand differences in preference. On the basis of the above discussion, the following predictions were made:

P3a. Differentiating advertising will lead to a significant increase in mean preference ratings and the dispersion in preference ratings compared to the no-advertising condition.

P3b. Reminder advertising will not lead to a significant increase in mean preference ratings and the dispersion in preference ratings compared to the no-advertising condition.

Effects of advertising on price perceptions. Consumers' perceptions of prices of brand alternatives are a function of the information available. Thus, in the absence of advertising, consumers are less likely to perceive significant differences across comparable brands. In contrast, when differentiating advertising conveys information on the attributes of the various brands, it is

likely that some will be perceived as being clearly superior to others. This is expected to affect price expectations for the various brands and also the variance in expected prices. Therefore the following prediction was made:

P4. Differentiating advertising will result in higher mean expected prices and higher dispersion in expected prices compared to the no advertising condition.

Subjects' expectations of prices were likely to be different across various brands. The pretest was also designed to help calibrate the price levels and price variations to be used in Experiment 3 which would directly test for the effects of advertising on price elasticity. It was desired to set normal price levels for each brand that would make all brands roughly equal in attractiveness, so that the preference orderings would be maximally sensitive to price discounts. This was especially crucial for a product category such as candy bars where consumers are not expected to be very price sensitive a priori.

Effects of advertising on interbrand variances in perceptions. Marketers often attempt to differentiate brands on certain advertised dimensions in order to alter the consumers' preference-ordering for the various alternatives available. The increased salience of certain advertised attributes might result in consumers using criteria provided in the ad for the purpose of evaluation. If differentiating advertising 'frames out' a relevant subset of brands based on

the attributes used for differentiation, it is likely that brands within a particular subset will be perceived as being more similar than brands in general. Brands in different subcategories are likely to be perceived as being more dissimilar when subjects are exposed to differentiating advertising compared to subjects in the control condition. This leads to the following prediction:

P5. The variance in pairwise similarities among brands will be higher in the differentiating advertising condition than in the no advertising condition.

Subjects

Twenty-four subjects enrolled in an introductory marketing course in the University of Florida participated in the experiment. Those who participated were given two extra credits in their class.

Procedure

The study was conducted at the behavioral laboratory provided by the Center for Consumer Research at the University of Florida. The experiment was conducted on four IBM PC-XT computers with enhanced graphics (EGA) monitors. Subjects participated in groups of one to four, with groups randomly assigned to between-subjects conditions. All subjects participated in two experimental sessions held on two consecutive days. The stimuli and tasks for the experiment are detailed in Appendix I.

Session 1. All the task instructions for the first session were administered using the computer. Subjects were first given an overview and preliminary instructions for the experiment (detailed in Appendix IA-1). They were told that the study involved Canadian candy bars which were being considered for introduction into the local market. They were then exposed to product and package information (name, weight and contents) on twelve brands of Canadian candy bars one at a time. The information on each brand was flashed on the screen for 15 seconds. The brand description protocols are detailed in Appendix IA-2.

After being exposed to the brand information, subjects performed a recognition task, the instructions for which are detailed in Appendix IA-3. The purpose of this task was to test whether the brand names were accessible in memory. The task involved correctly identifying the twelve target brands from a larger list of twenty four brands (which included 12 distractor brands). The distractor brands (listed in Appendix IA-4) consisted of Canadian candy bars and were randomly intermixed with the target brands. Subjects were judged to have performed satisfactorily on the recognition task if they were able to correctly identify all the target brands and had less than 75% failure rate with the distractors.

Subjects who failed to satisfy the criteria for the recognition task were exposed to the product and package

information again before they attempted to perform the recognition task again. This was repeated until all subjects had performed satisfactorily on the test, as measured by the criteria listed above. The computer recorded the number of exposures that were required for each subject to satisfy the criteria for the recognition test. Subjects who finished earlier than the others were asked to wait quietly. When all subjects completed the task, they were thanked for their participation and asked to return for the next session.

Session 2. During the second session, subjects in the two advertising conditions were exposed to ads for the various brands. The experimenter showed the ads to the subjects in the differentiating and reminder advertising conditions. Subjects in the no-advertising condition did not see any ads.

Advertising stimuli. The stimuli for the differentiating advertising condition were 30-second television commercials for the twelve brands of candy bars. These were provided by the manufacturers of the Canadian candy bars. The stimuli used for the reminder advertising condition were slides created from the television commercials, and showed the package and the brand name. A remote control slide projector was used to show the reminder ads to the subjects. The duration of exposure to the reminder ads for each brand was 15 seconds. It was judged that a 30 second exposure to the

reminder ads would have produced irritation among subjects that would have confounded the interpretation of the results.

After this, all subjects completed two questionnaires. The first questionnaire required subjects to perform the following tasks:

Brand name recall task. Subjects were asked to recall and list the target brands of candy bars. The instructions for this task are detailed in Appendix IB-1.

Attribute recall task. Subjects were provided with a list of candy bar names for which they had been exposed to information (product and package, and in some cases, advertising) on candy bars. They were asked to recall and list the attributes that describe the candy bars. The instructions for this task are detailed in Appendix IB-2.

Preference rating task. The instructions for this task are detailed in Appendix IB-3. Subjects were required to indicate their preferences for the target brands of candy bars on a seven point (Extremely high--Extremely low) scale.

Price perception task. The instructions for this task are detailed in Appendices IB-4 and IB-5. Subjects were given the list of target brand names and were asked to estimate the most likely, lowest likely and highest likely price for each brand. They were told that 'Skor', a brand with which they were familiar was currently available on the market for $0.55.

    <u>Similarity rating task</u>. Subjects were asked to give
similarity ratings for the twelve brands on a seven-point
(highly similar--highly dissimilar) scale. The instructions
for this task are detailed in Appendix IB-6.

<u>Results and Discussion</u>

    The results of Experiment 1 are presented below.

    <u>Effects of advertising on the number of brands recalled</u>.
It was predicted that since advertising increases the ability
to recall brand names, subjects who were exposed to ads would
perform better on the brand name recall task than those who
did not see any ads. An analysis of variance on the total
number of brand names correctly recalled across the three ad
conditions approached significance, $\underline{F}(2,21) = 2.49$, $\underline{p} < .10$,
$(\hat{\omega}^2 = .11)$. Moreover, there were significant differences
between the control condition ($\underline{M} = 4.87$) and the two
advertising conditions ($\underline{M} = 7.31$), $\underline{F}(2,22) = 4.90$, $\underline{p} < .05$.
There were no significant differences between the reminder ($\underline{M}$
$= 7.12$) and differentiating ($\underline{M} = 7.50$) advertising
conditions, $\underline{F}(1,21) <1$. Thus the results were in the
predicted direction, indicating that there was a positive
effect of advertising on the ability to recall brand names.

    <u>Effects of advertising on the number of attributes
recalled</u>. It was predicted that if differentiating
advertising did indeed convey attribute information about the
brands, then subjects in this condition should perform better
on an attribute recall task compared to subjects who were not

exposed to such ads. The attributes considered were those that were initially presented to all subjects. An analysis of variance conducted on the total number of brand-attributes correctly recalled in the differentiating advertising condition ($\underline{M}$ = 6.50) and the no advertising condition ($\underline{M}$ = 4.75) approached significance, $\underline{F}(1,21)$ = 2.95, $\underline{p}$ < .10, ($\hat{\omega}^2$ = .04). As expected, subjects in the reminder advertising condition ($\underline{M}$ = 5.00) did not differ significantly from those in the control condition ($\underline{M}$ = 4.75) on the number of attributes correctly recalled, $\underline{F}(1,21)$ < 1. Thus the results were in the predicted direction, indicating that there was a simple effect of differentiating advertising on attribute recall scores.

Effects of advertising on interbrand differences in preference. It was predicted that advertising that results in real or image-based differentiation will change the utilities and the variance in utilities for the various brand alternatives. Thus we would expect the mean preference ratings and the variance in ratings to be higher when subjects are exposed to differentiating advertising compared to the no advertising condition. An analysis of variance conducted on the mean preference ratings across the advertising conditions was significant, $\underline{F}(2,21)$ = 3.38, $\underline{p}$ < .05, ($\hat{\omega}^2$ = .17). There were no significant differences in mean ratings between the differentiating advertising condition ($\underline{M}$ =4.8) and the no advertising condition ($\underline{M}$ =

4.56), $F(1,21) < 1$. Although reminder ads were not expected to have a significant effect on preferences for the various brands, mean ratings were lower in this condition ($M = 4.17$) than in the control condition.

It was predicted that differentiating advertising will lead to a greater variance in preference ratings in comparison to the no advertising condition. An analysis of variance performed on the standard deviation of preference ratings approached significance, $F(2,21) = 2.16$, $p < .14$, ($\hat{\omega}^2 = .09$). As expected, the dispersion in brand-utilities was marginally greater in the differentiating advertising condition ($M = 1.72$), as compared to the control condition ($M = 1.37$), $F(1,21) = 3.24$, $p < .08$. There were no significant differences between the control condition and the reminder advertising condition in the variance in brand-utilities, $F(1,21) < 1$. Thus the results were in the predicted direction and showed that differentiating advertising did result in a greater spread in brand-utilities.

Results show that the differences across advertising conditions were not large. It is possible that subjects anchored high and low ends of the preference scale with whatever stimuli seemed most and least preferred. Such response language differences across conditions could have thus defeated this prediction (Lynch, Chakravarti & Mitra 1990; Upshaw 1962; Wyer 1974).

This result provided insight on the preference measure that was to be used in Experiment 3. Measures of revealed preference, which are not likely to be susceptible to response language effects were used rather than rating scale measures of preference.

Effects of advertising on price perceptions. It was expected that differentiating advertising would lead to higher expected prices on the average compared to the control condition. Mean price estimates for the various brands were examined as a function of advertising condition.

An analysis of variance on mean price estimates showed that there were no significant differences between the differentiating advertising condition ($\underline{M}$ = 57.34) and the no advertising condition ($\underline{M}$ = 53.58), $\underline{F}(1,21)$ < 1, ($\hat{\omega}^2$ < 0). The dispersion of estimated prices were also predicted to be higher in the differentiating advertising condition in comparison to the no advertising condition. An analysis of the standard deviation of price estimates showed that the price dispersion was higher in the differentiating advertising condition ($\underline{M}$ = 8.66) than in the control condition ($\underline{M}$ = 5.50). But although the means were in the predicted direction, the differences were not significant, $\underline{F}(1,21)$ = 1.66 $\underline{p}$ < .25, ($\hat{\omega}^2$ = .03).

Although the mean price estimates and the variance in price estimates showed trend in the predicted direction, the differences were not significant. Since there were only

eight subjects for each mean being compared, this could have been due to the lack of power to detect hypothesized effects.

Estimates of high and low prices. Besides providing expected most likely price estimates, subjects also reported highest and lowest likely prices for each brand. These estimates were used to calibrate high and low prices that were to be used in Experiment 3. The procedure that was used to set the discounted price for each brand is detailed in the next chapter.

Effects of advertising on interbrand differences in perceptions. It was predicted that differentiating advertising which highlighted attributes of brands would result in some brands being perceived as similar to some and more dissimilar to others. Thus the variance in pairwise similarities was expected to be higher under differentiating advertising condition compared to the no advertising condition. An analysis of the variance of pairwise similarities showed that there were no significant differences across advertising conditions, $F(2,21) < 1$, ($\hat{\omega}^2 < 0$). Thus there is not enough evidence to conclude that differentiating advertising did result in brands being perceived as more dissimilar.

A possible explanation for this could be that in the absence of advertising information, subjects used the brand name and attribute information (presented in the first session) to make judgments about the similarity of brands.

Since these were real candy bar names, many of these provided some insight about the different attributes possessed by the brands (e.g., Crispy Crunch, Caramilk). Therefore it is likely that even in the no advertising condition, subjects perceived brands to be quite dissimilar apriori, simply on the basis of their names. In comparison, brands were not perceived to be more different when they were advertised, thus resulting in no significant differences across advertising conditions. Also, response language effects, (whereby subjects anchored high and low ends of the similarity scale with stimuli that seemed to be most and least similar) could have been the reason for the inability to detect significant effects empirically.

<u>Conclusions</u>

The results of the first pretest were encouraging. On the basis of the findings it was clear that the ads that were being used were leading to results in the predicted direction. It is likely that the small sample size in the pretest resulted in the lack of sufficient power to detect hypothesized effects. In spite of this, it was clear that the advertising manipulation was quite effective in terms of bringing about expected changes in the number of brands recalled and the distribution of preferences. This was further explored in the next pretest.

Experiment 2

In the first pretest, the analysis of variance on the number of brands recalled across advertising conditions was marginally significant ($p < .10$, $\hat{\omega}^2 = .11$). As predicted, there was a significantly positive effect on recall scores when subjects were exposed to advertising ($M = 7.31$) and compared to the no advertising condition ($M = 4.87$). However, it was desired to have a stronger memory manipulation which would result in sufficient power to detect significant effects on price sensitivity. Moreover, it was desired to reduce the average size of the consideration set in the no advertising condition because a proportionate change in consideration set size should have a larger effect on price elasticity if set sizes are small rather than large. In other words, it was important to ensure that the differences in recall between the advertising and control conditions were even greater. Therefore this pretest was designed to incorporate modifications in the experimental procedure in order for advertising to have a stronger effect on the size of the consideration set. In order to achieve this objective, three specific changes were made in the procedure to be used for Experiment 3. The rationale for these changes are detailed below.

In the first pretest, subjects had been exposed to the brand information repeatedly until they met the criteria for satisfactory performance on the recognition task. It was

felt that an overexposure to this information was probably responsible for reducing the marginal effect of advertising in making brand names accessible in memory. Therefore it was necessary to limit the maximum number of times that subjects were exposed to this information. Accordingly, the procedure for this experiment was modified such that subjects could see the information no more than two times.

In the first pretest, subjects in the advertising conditions were exposed to ads for the candy bars only during the second session. In order for advertising to have significant effects on recall it was decided that subjects in the advertising conditions would be exposed to the ads two times--once during the first session and once during the second session.

It was evident from the first pretest that subjects had fairly high brand name recall scores in general, which made it difficult to detect significant improvements in recall due to advertising. Besides the modification in the recognition task to control for overexposure to brand information, a change was made in the procedure for this experiment. It was felt necessary to interfere with subjects' memory for target candy bar names, so that advertising might result in a stronger effect on recall scores. Accordingly, at the end of the first session, subjects were given a list of candy bar names to memorize. It was hoped that names from the same product category would interfere with their memory for the

target brand names so that advertising might have a significant effect on recall scores.

Subjects

Twenty-four subjects enrolled in an introductory marketing course in the University of Florida participated in the experiment. Participants were given two extra credits in their class.

Procedure

All subjects participated in two experimental sessions. In the first session they were exposed to product and package information (via the computer) on the brands and were given the modified recognition task to ensure that the brand names were available in memory. This implied that if even after two exposures to the brand information subjects did not perform satisfactorily on the recognition task, they went on to the next stage of the experiment.

After this, subjects in the differentiating advertising condition saw twelve ads, while subjects in the reminder advertising condition saw twelve reminder ads for the candy bars. The modified instructions to the subjects at this stage of the experiment are detailed in Appendix IC-1. Subjects in the no advertising condition did not see any ads and therefore went on to the next task. The advertising stimuli that were used for this experiment were the same as those used in the first pretest.

After this, subjects were given three minutes to memorize a list of twenty-four candy bar names which included twelve American and twelve European brands available in the Gainesville market. The instructions and stimuli for this task are listed in Appendix IC-2 and IC-3 respectively. When they had completed this task they were thanked and asked to come back for the next session.

In the second session, all subjects completed the brand name recall task where their objective was to recall and list as many brand names as they could. Before they performed this task, subjects in the advertising conditions were exposed to ads for the candy bars. These ads were the same as those that they had seen in the first session. Subjects in the no advertising condition did not see any ads and completed the questionnaire directly.

Results and Discussion

It was predicted that advertising will have a significant effect on the total number of brands recalled. An analysis of variance across the three advertising conditions was significant, $F(2,21) = 18.59$, $p < .0001$, ($\hat{\omega}^2 = .59$). Subjects in the two advertising conditions recalled a significantly greater number of brands than subjects in the control condition ($M = 8.43$ and $M = 3.00$ respectively), $F(2,21) = 38.57$, $p < .0001$. As in Experiment 1, there were no significant differences in recall scores between the

reminder ($\underline{M}$ = 8.25) and differentiating advertising ($\underline{M}$ = 8.62) conditions, $\underline{F}(1,21)$ <1.

On the basis of these findings it was possible to demonstrate with this independent sample of subjects that advertising could indeed have significant effects on the memory for brand names. Therefore in choice environments in which memory for brand names is important such effects can be expected to prevail. If the ability to recall brand names is the only determinant of the number of brands considered, we can expect consideration set sizes across different advertising conditions to follow the same pattern as brand name recall scores. Thus this pretest provided a benchmark against which to compare and interpret the results on consideration set size. The next chapter details the experiment that tests for advertising effects on price sensitivity, mediated by the preferences and the size of the consideration set.

CHAPTER V

AN EMPIRICAL INVESTIGATION OF THE IMPACT OF ADVERTISING
ON PRICE ELASTICITY: RESEARCH METHODOLOGY

Chapter Overview

The propositions developed in Chapter III concerned how advertising could influence consumer price sensitivity. The relationship between these two variables was conceptualized as being mediated by two key constructs--the size of the consideration set and the dispersion of brand-utilities. It was argued that advertising could have either a positive or a negative effect on the number of brands considered at the time of choice. Hence, by increasing or decreasing the size of the consideration set, advertising could have a positive or negative effect on price sensitivity. Besides affecting the size of the consideration set, advertising could also increase the spread of utilities of brands and result in some brands being perceived as being clearly superior to others. This would lead to a decrease in price sensitivity.

In this study on the economic effects of advertising, the content of advertising (whether reminder or differentiating) and the decision environment (whether stimulus-based or memory-based) were hypothesized to moderate the relationship between advertising and price sensitivity. It was predicted that in memory-based decision environments,

advertising is likely to influence the ability to recall brands and also the spread of brand-utilities. This was postulated to have implications for the number of brands considered for choice, the direction being determined by the relative strength of these two factors. In stimulus-based choice environments, where the ability to recall a brand is not an important factor for it to be a candidate in the consideration set, the effect of advertising is primarily mediated by the dispersion of brand-utilities.

This chapter details the methodology employed in Experiment 3 to test these hypotheses. The remainder of this chapter is divided into three main sections which describe (1) the subjects and stimuli used for the study, (2) the rationale for the factors employed, (3) the dependent variables, (4) the stimulus design, and (5) the experimental procedure that was employed.

Subjects

One hundred and ninety-eight students enrolled in the Introductory Marketing course at the University of Florida participated in the experiment. Subjects received two extra credits in their class and $3.00 in candy of their choice for participating in the study. Subjects had to participate in both sessions in order to successfully complete the experiment. Seven subjects failed to complete the study and their data were not used for the analysis.

Stimuli

The product category used for this study was candy bars. Since the experiment used real products and real ads for these products it was necessary that the existing advertising for the products had certain desirable properties. First, for the purpose of this experiment it was necessary to have a product category with which subjects were relatively familiar so that they could make trade-offs between prices and other attributes relatively easily. Second, it was necessary that it be a category in which there exists attribute-based differentiation among brands so that it is likely that the advertising could highlight such differences. In both these respects the product class of candy bars was considered appropriate for the study.

The study attempted to examine the effect of advertising on price sensitivity mediated by preferences and the size of the consumers' consideration set. In order to be able to draw unambiguous conclusions about the effect of advertising on these mediating variables it was also crucial that the subject population not have prior familiarity with the brands and the ads that were to be used in the experiment. Therefore the stimuli for the study were twelve Canadian candy bars.

Experimental Factors

This section details the experimental factors that were manipulated in the study. As noted earlier, the study employed a design in which advertising condition and decision environment were between subjects factors and price of twelve brands was manipulated within subjects.

Advertising Condition

Advertising Condition was manipulated at three levels in order to gauge the effects of advertising content on price elasticity. Subjects in the differentiating advertising condition saw ads for all twelve candy bars. These ads provided information on brand attributes and were predicted to change subjects' relative preference for the brands compared to a situation where none of the brands were advertised. Subjects in the reminder ad condition saw ads which provided information on the package and brand name, similar to some print or billboard advertising. These ads were predicted to increase the likelihood of inclusion of the advertised brands in the consideration set. Subjects in the no advertising condition served as a control group and were not exposed to any ads for the candy bars.

An alternative manipulation would have been to advertise a subset of brands instead of all of them. This would have been closer to real-world situations where advertised and unadvertised brands exist simultaneously. Also, this manipulation could probably have provided better insights on

the signalling properties of advertising and how advertising affects preferences. But this might have led to demand artifacts, especially in a rating/choice situation. Also advertising for a few brands was likely to lead to inhibition effects (Alba & Chattyopadhyay 1986). It was felt that the power of detecting any of the hypothesized effects was also likely to be greater if all the brands were advertised.

Decision Environment

Subjects went on shopping trips in which they made choices among the candy bars. In order to gauge the effects of consideration set size on price elasticity and the effects of advertising on consideration set size, the decision environment was manipulated at two levels. Subjects in the stimulus-based choice condition were provided with a list of all twelve brands and could therefore use this list to decide which brands to examine for price information and purchase. This was intended to reflect real-world situations in which the aisle display or a salesperson reminds the consumer of the set of brands that might actually be purchased.

Subjects in the memory-based choice condition did not have such a list available to them. These subjects could only search for price information on brands that they were able to recall on their own. Therefore they could only purchase brands that they could retrieve from memory. This manipulation was intended to reflect real-world decision situations in which the consideration set is typically

generated from memory. Once they could recall a brand name correctly, subjects had access to the same information that was available to subjects in the stimulus-based decision environment, because attribute information was memory-based for both groups.

Thus the only difference between these two groups was whether they had to recall the brand names or had to access them from memory. In the absence of any advertising for the brands, the differences between groups in the two decision environments could be attributed purely to memory factors. This provides better insights on the cuing properties of advertising and how advertising influences the size of the consideration set.

Dependent Variables

For each subject, the following dependent measures were collected:

1.   measures of average consideration set size;

2.   measures of dispersion--the proportion of budget allocated to the top brand, the number of brands ever considered, the standard deviation of the proportion of budget allocated to the various brands, the standard deviation of the frequency of choosing the various brands;

3.   price elasticity of each brand.

Stimulus Design for Price Manipulation

The prices of the twelve brands were manipulated within-subjects at two levels (high or low) independent of each other. It was determined that sixteen shopping trips were required in order for prices to vary orthogonally for the twelve brands. Whether a particular brand was at its high or low price was varied within subjects in a 1/256th fraction of a 2^{12}th within-subjects design. Sixteen brand-price profiles were constructed such that across these profiles each brand was at its high price in eight brand price profiles, and at its low price for the other eight with the prices of the brands uncorrelated with each other across trials. The brand-price profiles used for the experiment are detailed in Appendix IIA-1. The order in which subjects saw these brand price profiles for the sixteen shopping trips was counterbalanced across subjects in a 16X16 diagram-balanced Latin Square design. Thus each subject saw the brand-price profiles in a particular sequence. There were sixteen such between-subjects sequences to which subjects were assigned.

The sixteen level sequence factor described above simultaneously counterbalanced order of presentation of the sixteen price profiles and the order of presentation of brand-triples in advertising. The latter will be explained later.

Subjects were told that the prices of the twelve brands were to vary from one shopping trip to another. At a

particular point in time, a given brand was at its high price for half the subjects and at its low price for the other half. The price manipulation was used to compute independent measures of self price elasticities at the brand level.

The high prices were calibrated from the average highest likely price estimates (which are detailed in Appendix IIA-2) that were obtained from the control group of subjects in Experiment 1. In order to detect effects on price sensitivity it was necessary that the price differential was sufficient to cause a change in purchase patterns. The mean lowest likely price estimates obtained from the control group in Experiment 1 were used to calibrate the low prices for the brands. The figures were rounded off to the nearest 5 cents to arrive at the high prices for the various brands. The low price used in the experiment was 25 cents lower than the high price, which worked out to an average 34% discount. The actual high and low prices that were used for the twelve brands are detailed in Appendix IIA-3.

Procedure

To test the hypotheses, a computer-based shopping simulation was developed and employed. The study was conducted at the behavioral laboratory provided by the Center for Consumer Research at the University of Florida. The experiment was conducted on four IBM PC-XT computers with enhanced graphics (EGA) monitors. All subjects participated

in two experimental sessions held on two consecutive days. All experimental instructions were administered using the computer, thus limiting the experimenter's role during the experiment to exposing the subjects to advertising, answering questions and handling minor administrative details. This reduced experimenter-induced biases and ensured that all subjects received the same task instructions. All data were collected by the computer eliminating the chances of transcription or keypunching errors.

Subjects participated in batches of one to four each, Upon entering the room, each subject was randomly assigned to one of the four sequences nested in an Order. Eight subjects completed the experiment for each of the 24 between-subjects cells (described in Appendix IIB-2).

Session 1

Subjects were first given an overview and preliminary instructions for the experiment. They were told that the study involved Canadian candy bars which were being considered for introduction into the local market. They were then exposed to product and package information on twelve brands of Canadian candy bars one at a time. The information on each brand was flashed on the screen for 15 seconds.

The sequence in which this information was presented to subjects was counterbalanced. The twelve brands were divided into four triples of three brands each. These are detailed in Appendix IIB-1. Thus the order of presentation of

information on these twelve brands can be conceptualized as the order of presentation of information on four triples. The sixteen sequences corresponding to presentation order for price profiles were divided into four groups (Orders) with four sequences nested in each (detailed in IIB-2). The position of these brand-triples in the string of twelve was varied across the four groups in a 4X4 Latin square design (detailed in Appendix IIB-3). Therefore the position of each particular triple was counterbalanced across subjects.

  <u>Recognition task</u>. After being exposed to the brand information, subjects performed a recognition task, the purpose of which was to test whether the brand names were in memory. The task involved correctly identifying the twelve target brands from a larger list of twenty-four Canadian candy bar names randomly intermixed with the target brands. Subjects who failed to satisfy the criteria for the recognition task were exposed to the product and package information once more before they attempted to perform the recognition task again. If after the second exposure to the brand information they did not perform satisfactorily on the recognition test, they went on to the next stage of the experiment. The computer recorded the number of exposures required for each subject to satisfy the criteria for the recognition test. Subjects who finished earlier than the others were asked to wait quietly.

Advertising exposure manipulation. Subjects were now exposed to ads for the candy bars. Subjects in the differentiating advertising condition saw twelve differentiating ads, while subjects in the reminder advertising condition saw twelve reminder ads for the candy bars. Subjects in the no advertising condition did not see any ads and therefore went on to the next task.

The sequence in which these ads were presented to subjects was counterbalanced. The ads for the four brand-triples (described in Appendix IIB-1) were divided into four triples of three ads each. The position of ads corresponding to these brand-triples was varied across the four Orders in a 4X4 Latin square design. This is detailed in Appendix IIB-4.

The stimuli used in this study were those that were used in the pretests. The stimuli for the differentiating advertising condition were 30-second television commercials for the twelve brands of candy bars. The stimuli used for the reminder advertising condition were slides taken from the television commercials, and showed the package and the brand name. A remote control slide projector was used to show the reminder ads to the subjects. The duration of exposure to the reminder ads for each brand was 15 seconds.

Interference task. After this, subjects were given three minutes to memorize a list of twenty-four candy bar names which included twelve American and twelve European brands available in the Gainesville market. This was the same list

that was used for Experiment 2. When they had completed this task they were thanked and told to come back for the next session.

Session 2

The introduction and preliminary instructions for the second session are detailed in Appendix IIC-1 and IIC-2.

Shopping trips. Subjects were first told that they would be going on 16 different shopping trips for the Canadian candy bars which they had seen the day before. They were told that they had $3.00 to spend on each shopping trip. They were also told that they would actually receive the candy bars that they purchased on one of these shopping trips. They did not know in advance which of these shopping trips would be involved in their actual purchase--this was to be randomly determined.

Subjects were informed that prices of the candy bars would be varying from one shopping trip to another, so that a brand that was at a low price on one of the shopping trips would not necessarily be at that price on the next trip. They were told that on any particular shopping trip they could ask for price information on as many or as few brands as they wanted.

Practice trips. Before shopping for candy bars, subjects went on four practice shopping trips. The purpose of these practice trips was to familiarize subjects with shopping on the computer and to ensure that they knew how to search for

price information on the brands that they liked. It was hoped that these practice trips would demonstrate to them that prices were indeed varying from trip to trip. The introduction to the practice trips are detailed in Appendix IIC-3.

The product category of soaps was used for the practice trips. It was desirable that the product category used for the practice trips was one in which there are not many perceived differences between brands so that price would be an important factor in decision making. Since candy bars were to be used for the main study, and consumers are believed not to be very price sensitive in that category, it was important to devise ways that would increase the weight given to price, and thus increase the power of the experiment to detect effects. In choosing a product category it was also necessary to ensure that it was not one that would make the price differences for candy bars seem insignificant. Therefore six familiar brands of soaps were used for the practice trips.

The prices of soaps were varied independently of each other. Four brand-price profiles were constructed with each brand being at its high price for two profiles and at its low price for two profiles.

Subjects went on four practice trips. On each trip, the computer made available the list of six brand names for which they could search for price information. When subjects

requested information by typing in the brand name, the computer responded with the price for that particular brand. Subjects could search for information on as few or as many brands as they liked. When they specified that they did not require further information they were instructed to allocate their budget of $3.00 among soaps of their choice. After each purchase, the computer tallied the remainder of the budget that was still available. After completing one particular practice shopping trip, subjects went on to the next trip. The instructions for the practice trips are detailed in Appendix IIC-4.

Advertising Exposure #1. After the practice shopping trips, subjects in the advertising conditions were exposed to ads for the candy bars. Subjects in the no advertising condition did not see any ads and therefore went on to the next task.

A similar procedure was used for the advertising exposure manipulation for the second session as in the first session. The instructions before the exposure to advertising is detailed in Appendix IID-1. The same 4X4 Latin Square design (detailed in IIB-4) was used for this purpose, thus resulting in subjects seeing the ads in the same sequence in this session compared to the first session.

Shopping trips. After this, subjects went on 16 shopping trips for candy bars. Subjects in the stimulus-based choice condition were given a list of the twelve candy bars and they

typed brand names for which they wanted price information. The instructions for this condition are detailed in Appendix IID-2. Subjects in the memory-based choice condition did not have such a list available to them, and had to retrieve brand names from memory. The introduction and instructions for the memory-based condition are detailed in Appendix IID-3.

Subjects could search for price information on as few or as many brands as they wished. When subjects requested information by typing in the brand name, the computer responded with the price for that particular brand. The prices at which a subject saw a particular brand on a particular trip depended on the sequence number that s/he was assigned at the beginning of the experimental session. As noted earlier, across the sixteen shopping trips a subject saw brand-price profiles in one of sixteen possible sequences.

After they had finished searching for information on prices, they were instructed to allocate their budget of $3.00 among candy bars of their choice. After each purchase, the computer computed the remainder of the budget that was still available. After completing one particular trip, subjects went on to the next trip.

Advertising Exposure #2. Since the shopping trips were very similar to each other, it was felt that the positive effects of advertising on consideration set size would not be as strong with only one exposure to advertising. Thus there

would be a tendency for only a few brands to be included in the consideration set. In order to increase the power to detect significant effects, subjects in the two advertising conditions were exposed to ads for the candy bars once more after completing eight shopping trips. The sequence in which they saw the ads for the brands during the second exposure was the same as in the first exposure.

After this, subjects went on the remaining shopping trips for candy bars, with prices varying from one trip to another. In all these trips, subjects allocated $3.00 among candy of their choice. Subjects who had finished earlier than the others were instructed to wait quietly for the other participants to complete the experiment.

After they had completed the sixteen shopping trips, subjects were asked what strategies they had used in making their choices. They were also told that the computer would randomly select one of the 16 shopping trips for each of them and that they would get the candy bars that they had purchased on that shopping occasion. They were thanked for their participation and informed that they could collect their candy bars at the end of the semester.

The results of this study are presented in the next chapter.

CHAPTER VI

AN EMPIRICAL INVESTIGATION OF THE IMPACT OF ADVERTISING
ON PRICE ELASTICITY: RESULTS

Chapter Overview

This chapter presents the results of Experiment 3 in two
parts. The results pertaining to the average size of the
consideration set and the dispersion of brand-utilities are
first presented. Subsequently the findings corresponding to
price sensitivity are discussed.

The purpose of this study was to provide a better
understanding of the effects of advertising on price
elasticity by isolating the causal mechanisms underlying
these effects. It was proposed that the relationship between
advertising and price sensitivity is mediated by two basic
theoretical constructs--consideration set size and the
dispersion of brand-utilities. Therefore, before specific
hypotheses linking advertising with price sensitivity were
tested, it was necessary to verify that advertising did have
the predicted effects on these two mediating variables.

Results

Consideration Set Size

Consideration set was measured at the individual subject
level by the number of brands about which the subject asked
for price information on a given shopping trip averaged

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across the 16 shopping trips. The data were analyzed to test for the effects of Decision Environment, Advertising Condition and Sequence of Presentation on the number of brands considered per shopping trip. The results from an analysis of variance are presented in Tables VI-1 and VI-2.

TABLE VI-1

ANALYSIS OF VARIANCE

SOURCE	TYPE III SS	DF	F VALUE	P > F
ENVIRONMENT	61.45314514	1	15.82	0.0001
ADVERTISING	52.50655754	2	6.76	0.0018
ENVIRON*AD	98.99685669	2	12.74	0.0001
SEQ	42.59451248	15	0.73	0.7476
ENV*SEQ	57.52642877	15	0.99	0.4748
AD*SEQ	50.40397701	30	0.43	0.9947
ENV*AD*SEQ	113.16476440	30	0.97	0.5197
SS/ENV,AD,SEQ	369.49648233	95		

TABLE VI-2

MEAN CONSIDERATION SET SIZE

	ENVIRONMENT	
	STIMULUS BASED	MEMORY BASED
ADVERTISING		
NONE	5.24	2.26
REMINDER AD	4.72	5.25
DIFFERENTIATING	4.56	3.59

The results indicate that there were significant main effects of Advertising Condition and Decision Environment and a significant Advertising Condition X Decision Environment interaction. To examine more closely the nature of advertising effects under the two decision environments, analyses of planned comparisons were carried out.

Recall from Chapter III that it had been predicted that in the absence of advertising, consideration sets will be smaller in the memory-based choice condition than in the stimulus-based choice condition. This is because in the stimulus-based condition, brand names are readily available, and therefore it is not necessary to retrieve them from memory. This prediction was supported by a significant main effect of decision environment. The size of the consideration set was significantly smaller in the memory-based condition ($\underline{M}$ = 2.26) compared to stimulus-based condition ($\underline{M}$ = 5.24), $\underline{F}$(1,95) = 36.44, $\underline{p}$ < .001, ($\hat{\omega}^2$ = .06).

<u>Consideration sets in stimulus-based decision environments</u>. It was predicted that under stimulus-based choice environments, the primary effect of advertising on the size of the consideration set will be through its effect on the dispersion of preferences. Specifically, it was proposed that reminder advertising will not have a significant effect on the size of the consideration set, while differentiating advertising will increase the interbrand variance of utilities and thereby reduce the size of the set. The

findings are presented in Table VI-3 and VI-4. Results showed that there were no significant differences in the size of the consideration set between the reminder advertising condition (M = 4.72) and the no advertising condition (M = 5.25), $F(1,95)$ < 1. This finding lends support for the prediction that reminder advertising will not have an effect on the number of brands considered when the environment provides the brand names. This is because the recall cues provided by such ads are not crucial for the retrieval of brand names for consideration. However, even though the mean number of brands considered was less in the differentiating advertising condition (M = 4.56) than in the no advertising condition (M = 5.24), this contrast was not significant, $F(1,95)$ = 1.10. Therefore there is no support for the prediction that differentiating advertising will lead to a reduction in the size of the consideration set.

TABLE VI-3

CONSIDERATION SET IN STIMULUS-BASED ENVIRONMENT
REMINDER VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P>F
ADVERTISING	4.28619385	1	1.10	0.251
SEQ	56.14105225	15	0.96	0.687
AD*SEQ	39.95892334	15	0.68	0.885
SS/ENV,AD,SEQ	369.49648233	95		

TABLE VI-4

CONSIDERATION SET IN STIMULUS-BASED ENVIRONMENT
DIFFERENTIATING VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P>F
ADVERTISING	7.43414307	1	1.91	0.103
SEQ	50.42962646	15	0.86	0.750
AD*SEQ	55.20159912	15	0.94	0.909
SS/ENV,AD,SEQ	369.49648233	95		

Consideration sets in memory-based decision environments. It was predicted that in memory-based environments, there will be a significant simple effect of advertising on the size of the consideration set. The evidence provides strong support for this prediction of significant differences across advertising conditions, $F_{(2,95)} = 18.47$, $p < .001$, ($\hat{\omega}^2 = .05$). In order to examine more closely the nature of effects, analyses of planned contrasts were carried out. Results (presented in Table VI-5) showed that there was a significant positive effect of reminder advertising on consideration set size, $F_{(1,95)} = 36.78$, $p < .001$. The mean size of the consideration set was 5.25 in the reminder advertising condition compared to 2.26 in the no advertising condition. This lent support to the prediction that in an environment where brand names have to be retrieved from memory, the average size of the

consideration set will be larger under reminder advertising conditions compared to the control condition.

It was expected that under memory-based conditions, the size of the consideration set will be larger in the no advertising condition than in the differentiating advertising condition. Contrary to this prediction, the number of brands considered were significantly smaller in the control condition ($\underline{M}$ = 2.26) than in the differentiating advertising condition ($\underline{M}$ = 3.67), $\underline{F}$(1,95) = 6.9, $\underline{p}$ < .01. This result (presented in Table VI-6) lends further support to the assumption that the size of the consideration set is a positive function of the ability and motivation to retrieve a number of brands from memory. In the absence of advertising, the consumer has to rely on memory to recall brands for consideration. In comparison, advertising increases the ability to recall brands and therefore increases the size of the consideration set.

The results of Experiment 2 provided evidence that advertising increases the ability to recall brand names and that both reminder and differentiating advertising are equivalent in this respect. If consideration set size is a function of ability alone and is unaffected by the motivation to recall brand names from memory, then we would expect no differences in the effects of the two types of advertising on the size of the consideration set. However, results (presented in Table VI-7) showed that the average size of the

TABLE VI-5

CONSIDERATION SET IN MEMORY-BASED ENVIRONMENT
REMINDER VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P>F
ADVERTISING	142.87719727	1	36.78	0.001
SEQ	37.16577148	15	0.63	0.717
AD*SEQ	47.53295898	15	0.81	0.514
SS/ENV,AD,SEQ	369.49648233	95		

TABLE VI-6

CONSIDERATION SET IN MEMORY-BASED ENVIRONMENT
DIFFERENTIATING VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P>F
ADVERTISING	26.20667614	1	6.99	0.010
SEQ	49.62470911	15	0.84	0.750
AD*SEQ	29.13850565	15	0.49	0.909
SS/ENV,AD,SEQ	369.49648233	95		

TABLE VI-7

CONSIDERATION SET IN MEMORY-BASED ENVIRONMENT
DIFFERENTIATING VERSUS REMINDER ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P>F
ADVERTISING	42.96306818	1	11.06	0.010
SEQ	53.16983876	15	0.91	0.698
AD*SEQ	52.12819980	15	0.92	0.684
SS/ENV,AD,SEQ	369.49648233	95		

consideration set was significantly smaller under the differentiating advertising condition ($\underline{M}$ = 3.59) compared to the reminder advertising condition ($\underline{M}$ = 5.25), $\underline{F}(1,95)$ =11.06, $\underline{p}$ < .01. This suggests differentiating advertising, which provided more information on the relative utilities of the brands, resulted in reduced motivation to consider less favored options. The significant differences in consideration set size across these two advertising conditions suggest that the motivation to recall brand names did have a role in determining the size of the consideration set. Thus, though both types of advertising increased the ability to recall brand names from memory, they differentially affected the motivation to retrieve brand names in a prepurchase situation under which the objective was to search for prices. In the latter case, only the preferred brands were likely to be retrieved. An analysis of the effects of the two types of advertising on the preference lends further support for this prediction.

Measures of Interbrand Variance in Preference

Four behavioral measures of preference were used for the purposes of examining the effect of differentiating advertising on the dispersion of brand-utilities. These were determined from subjects' purchases of various brands under the different price conditions that they faced. For the individual subject, the following measures of preference (as revealed by their purchases) were computed.

Standard deviation of choice frequencies. For each
subject, the number of times each brand was bought was
computed across shopping trips. The standard deviation of
the twelve brands' choice frequencies was taken as a measure
of dispersion of brand-utilities. It was expected that in
the absence of any perceived utility differences across
brands, each brand has approximately equal probability of
being chosen. Thus the variance in the choice frequencies
for the various brands were expected to be small in the no
advertising condition. Compared to this, the variance in
choice frequency was expected to be greater in the
differentiating advertising condition, in as much as the
information from such advertising was likely to make some
brands preferable to others. Reminder advertising was not
expected to significantly affect the variance in choice
frequencies.

Standard deviation of share of the budget. This is
similar to the above measure but looks at the dispersion in
the percentage of actual dollar expenditures. For each
subject, the share of each brand in the total budget across
the shopping trips was computed. The standard deviation of
the percentage shares of the 12 brands was taken as a measure
of dispersion of brand-utilities. It was expected that if
there are no significant differences in perceived utility
across brands, then each brand has a constant probability of
being chosen. Since all the brands were in the same price

range, on an average there should not be any significant differences in the percentage of budget allocated to the 12 brands. Therefore, the variance in the percentage of budget allocated to the various brands was expected to be small in the absence of advertising. When differentiating advertising provides attribute information that leads to some brands being perceived to be clearly superior to others, the variance is expected to increase. Reminder advertising is not expected to increase the dispersion in the proportion of budget allocated to the various brands.

Share of budget allocated to top brand. For the individual subject, the percentage of budget allocated to the top brand was computed. It was expected that under the no advertising condition where there were no clearly superior alternatives, the share of the budget allocated to the top brand would be lower compared to the differentiating advertising condition. In the latter case, it was predicted that the share of the top brand would be higher because there would be a greater tendency on the part of subjects to buy a favored brand irrespective of the price.

Number of brands ever chosen. For each subject, the number of brands ever purchased across the 16 shopping trips was computed. It was expected that in the absence of differentiating information on attributes of the brands, consumers would be relatively indifferent between options. Therefore it could be expected that in the no advertising

condition, subjects would make purchases on the basis of price. This would increase the number of brands that are tried, because across different trials, different brands are likely to be lowest in price. In contrast, if differentiating advertising leads to some brands being perceived to offer greater utility to subjects, it is less likely that they would purchase clearly inferior brands only on the basis of its price advantage. Thus differentiating advertising would reduce the number of brands chosen. Reminder advertising was not expected to have any significant effects on preference and therefore on the total number of brands chosen.

   Results of effects of advertising on measures of interbrand variance in preferences. Before a discussion of the results it is important to note that these behavioral measures of preference were based on actual purchases made by subjects. The experimental design was such that subjects could only purchase what they could recall. Therefore, to examine the effect of advertising on utilities for the various brands it is necessary to have measures of revealed preference that are not confounded with the ability to recall. Hence, the results of the effect of advertising on the variance of all four measures of interbrand variances in preference will be analyzed for the stimulus-based environment only.

In the memory-based decision environment where the size of the consideration set itself is determined by recall factors, conclusions about preferences are more difficult. For example, a subject might be unable to recall brand names in the no advertising condition and this would prevent him/her from purchasing those brands. In such a case, the variance in the share of the budget allocated to the 12 brands would be high, not because of preference for the brands bought but rather because of the inability to recall other brands for consideration and purchase.

The means for the four measures of interbrand dispersion in preference are presented in Table VI-8 below.

TABLE VI-8

MEAN DISPERSION OF BRAND-UTILITIES

	NONE	REM	DIFF
DISPERSION IN CHOICE FREQUENCY	4.2480	4.9334	4.9981
DISPERSION OF SHARE OF BUDGET	0.0809	0.0940	0.0986
SHARE OF BUDGET TO TOP BRAND	0.2605	0.2953	0.2946
NUMBER OF BRANDS EVER CHOSEN	9.7812	8.9375	8.4062

Effects of differentiating advertising. An MANOVA analysis was conducted on the data for the four preference measures to test for effects of differentiating advertising on measures of interbrand variance in utilities. Results showed that there were significant differences between the no advertising condition and the differentiating advertising condition, $F(4,29) = 2.95$, $p < .03$. This supports the prediction that differentiating advertising did have an effect on variance of interbrand preferences.

Univariate tests also show that differentiating advertising did have an effect on preferences. It is evident that differentiating advertising did have a significant effect on the dispersion in choice frequencies. Table VI-9 presents the results from the analysis of variance which indicates that the difference in the dispersion of choice frequencies between the no advertising condition ($M = 4.25$) and the differentiating advertising condition ($M = 4.99$) approached significance, $F(1,62) = 2.78$, $p < .10$ ($\hat{\omega}^2 = .03$). This finding supports the prediction that differentiating advertising will increase the standard deviation of choice frequencies.

The results presented in Table VI-10 also support the prediction that differentiating advertising leads to a significant increase in the dispersion of proportions, $F(1,62) = 4.31$, $p < .04$, ($\hat{\omega}^2 = .04$). The standard deviation in the percentage of budget allocated to the various brands

was significantly greater under differentiating advertising ($\underline{M}$ = .10) than under the no advertising condition ($\underline{M}$ = .08).

Although differentiating advertising did have the predicted effect on the proportions allocated to the various brands, a similar pattern of results is not found for the share of the budget allocated to the top brand. Analysis of variance results presented in Table VI-11 show no significant differences in the share of the budget allocated to the top brand, $\underline{F}(1,62)$ = 1.34, $\underline{p}$ < .25, ($\hat{\omega}^2$ = .01). Thus the findings do not support the prediction that the share allocated to the top brand will increase under the differentiating advertising condition in comparison to the no advertising condition. A possible reason for this is that advertising led to a subset of brands being considered as acceptable, without any clear top choice. As a result, it is likely that if the top brand is at its high price, it was bought in lesser quantities as subjects switched to one of the other well-liked brands.

Table VI-12 presents the results for the analysis of variance on the number of brands ever chosen under the differentiating advertising ($\underline{M}$ = 8.40) and the no advertising ($\underline{M}$ = 9.78) conditions. It is evident from the findings that differentiating advertising led to a significant decrease in the number of brands ever purchased, $\underline{F}(1,62)$ = 6.68, $\underline{p}$ < .01, ($\hat{\omega}^2$ = .08). Thus the results support the prediction that differentiating advertising will reduce the number of brands

TABLE VI-9

DISPERSION IN CHOICE FREQUENCIES
DIFFERENTIATING VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P > F
ADVERTISING	8.83382541	1	2.78	0.1053
SEQ	26.26884830	15	0.55	0.8899
AD*SEQ	40.24464510	15	0.84	0.6263
SS/Ad,SEQ	101.76058461	32		

TABLE VI-10

DISPERSION IN PROPORTION OF BUDGET
DIFFERENTIATING VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P > F
ADVERTISING	0.00499094	1	4.31	0.0460
SEQ	0.01234201	15	0.71	0.7555
AD*SEQ	0.02090818	15	1.20	0.3180
SS/AD,SEQ	0.03703894	32		

TABLE VI-11

SHARE OF BUDGET ALLOCATED TO TOP BRAND
DIFFERENTIATING VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P > F
ADVERTISING	0.01854948	1	1.34	0.2552
SEQ	0.13948513	15	0.67	0.7907
AD*SEQ	0.24968350	15	1.20	0.3180
SS/AD,SEQ	0.44225911	32		

TABLE VI-12

AVERAGE NUMBER OF BRANDS EVER CHOSEN
DIFFERENTIATING VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P > F
ADVERTISING	30.25000000	1	6.68	0.0145
SEQ	59.43750000	15	0.87	0.5962
AD*SEQ	50.75000000	15	0.75	0.7213
SS/AD,SEQ	145.00000000	32		

ever chosen, because it will lead to some brands being perceived to be clearly superior to others.

Taken together, the pattern of results discussed in this section indicate that differentiating advertising did significantly affect brand-utilities in the stimulus-based decision environment. The increased dispersion in brand-utilities can be expected to have implications for price elasticities observed under this condition.

Effects of reminder advertising. A multivariate contrast between the reminder advertising condition and the no advertising condition in a MANOVA analysis of the four preference measures showed no significant differences $F(4,29) < 1$.

Univariate tests reveal that the effects of reminder advertising on the measures of interbrand variance in preferences approached significance in some cases. Reminder advertising increased the standard deviation of choice

frequencies (M = 4.93) compared to the no advertising condition (M = 4.25), and this effect approached significance, $F(1,62)$ = 2.67, p < .11, ($\hat{\omega}^2$ = .02). The results are presented in Table VI-13.

The dispersion in the proportion of budget allocated to the various brands were lower in the reminder advertising condition (M = .09) than in the no advertising condition (M = .08), and this difference approached significance $F(1,62)$ = 3.16, p < .08, ($\hat{\omega}^2$ = .02). These results are presented in Table VI-14.

An analysis of variance on the share of budget allocated to the top brand across these two advertising conditions was not significant, $F(1.62)$ = 2.12, p < .15, ($\hat{\omega}^2$ = .01). These results are presented in Table VI-15. Results (presented in Table VI-16) show that the average number of brands ever chosen did not significantly differ between the reminder advertising condition and the no advertising condition, $F(1,62)$ = 2.22, p < .15.

TABLE VI-13

DISPERSION IN CHOICE FREQUENCIES
REMINDER VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P > F
ADVERTISING	7.51580254	1	2.67	0.1118
SEQ	39.84124419	15	0.94	0.5259
AD*SEQ	29.03591569	15	0.69	0.7763
SS/AD,SEQ	89.95440461	32		

TABLE VI-14

DISPERSION IN PROPORTION OF BUDGET
REMINDER VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P > F
ADVERTISING	0.00274298	1	3.16	0.0848
SEQ	0.01727033	15	1.33	0.2429
AD*SEQ	0.01191580	15	0.92	0.5561
SS/AD,SEQ	0.01191580	32		

TABLE VI-15

SHARE OF BUDGET ALLOCATED TO TOP BRAND
REMINDER VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P > F
ADVERTISING	0.01930218	1	2.12	0.1547
SEQ	0.15181354	15	1.11	0.3835
AD*SEQ	0.17488103	15	1.28	0.2681
SS/AD,SEQ	0.29074490	32		

TABLE VI-16

AVERAGE NUMBER OF BRANDS EVER CHOSEN
REMINDER VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P > F
ADVERTISING	11.39062500	1	2.22	0.1464
SEQ	66.48437500	15	0.86	0.6081
AD*SEQ	38.35937500	15	0.50	0.9240
SS/AD,SEQ	164.50000000	32		

It is interesting to note that although reminder advertising was not postulated to significantly influence the perceived utilities offered by the various brands, the results indicate that it did have a minor effect. An analysis of debriefing protocols suggest that the picture of the package provided some information about the relative worth of the various brands, which in the absence of other information was used as a means of differentiation. Thus, it is likely that the reminder ads used for the study served more than just the reminder function.

Price Elasticity

Price elasticity was calculated for each of the 12 brands at the individual subject level by looking at quantities purchased across 16 shopping trips. Prices were varied over the trips, and the quantities purchased for each brand at their respective high and low prices were aggregated to compute price elasticity. The arc elasticity measure that was used is defined as

$$\text{Arc Elasticity} = \frac{\Delta Q/\text{Mean } Q}{\Delta P/\text{Mean } P}$$

For each subject, the twelve brand-level elasticities were analyzed with brands as a within-subjects factor. It was expected that the 12 brands should show similar patterns of these manipulations, although main effects of brands might be based upon differential popularity of the brands.

ANOVA effects treating brands as fixed. The data were analyzed in a mixed ANOVA design with between-subjects factors of Advertising Condition, Decision Environment and Sequence, with Brands as a repeated factor (3 X 2 X 16 X 12). Results are first presented treating all factors, (including Brands) as fixed. This would imply that statistical generalizations from this experiment are limited to effects observed with the specific brands that were used in the study. The results are presented in Table VI-17 to VI-19.

Results indicate that there was a significant effect of decision environment, advertising condition and the Advertising X Environment interaction. Analyses of planned contrasts were conducted to better understand the locus of these effects on price elasticity.

TABLE VI-17

TESTS OF HYPOTHESES FOR BETWEEN SUBJECTS EFFECTS

SOURCE	TYPE III SS	DF	F VALUE	P > F
ENVIRONMENT	190.80058080	1	22.09	0.0001
ADVERTISING	85.14927157	2	4.93	0.0092
ENV*AD	252.53599766	2	14.62	0.0001
SEQ	92.52268851	15	0.71	0.7646
ENV*SEQ	136.42643032	15	1.05	0.4102
AD*SEQ	248.41869797	30	0.96	0.5357
ENV*AD*SEQ	310.57843835	30	1.20	0.2515
SS/ENV,AD,SEQ	820.53705672	95		

TABLE VI-18

ANALYSIS OF VARIANCE
UNIVARIATE TESTS OF HYPOTHESES FOR WITHIN SUBJECTS EFFECTS

SOURCE	TYPE III SS	DF	F VALUE	P > F
BRAND	152.29064736	11	4.03	0.0001
BRAND*ENV	23.66011338	11	0.63	0.8075
BRAND*AD	56.13321359	22	0.74	0.7971
BRAND*ENV*AD	124.03344868	22	1.64	0.0316
BR*SEQ	504.17150129	165	0.89	0.8275
BR*ENV*SEQ	615.79173623	165	1.09	0.2309
BR*AD*SEQ	1274.17431349	330	1.12	0.0905
BR*ENV*AD*SEQ	950.01510608	330	0.84	0.9732
BR*SS/ENV,AD,SQ	3589.46828	1045		

TABLE VI-19

MEAN PRICE ELASTICITY

	ENVIRONMENT	
	STIMULUS BASED	MEMORY BASED
ADVERTISING		
NONE	-2.02	-0.53
REMINDER AD	-1.54	-1.59
DIFFERENTIATING	-1.24	-0.94

In the absence of advertising, price elasticity was greater in the stimulus-based environment ($\underline{M}$ = -2.02) than in the memory-based environment ($\underline{M}$ = -0.53), $\underline{F}$(1,95) =36.44, $\underline{p}$ < .001, ($\hat{\omega}^2$ = .08). This finding lends strong support to H1 that the price elasticity will be greater under stimulus-

based choice situations than under memory-based choice situations.

Price elasticity in stimulus-based decision environments. Analyses of planned contrasts were carried out to test for the effects of advertising on price elasticity in the stimulus-based choice environment. Results (presented in Tables VI-20 and VI-21) show that there was a significant simple effect of advertising on price elasticity, $\underline{F}(2,95) = 6.90$, $\underline{p} < .01$, ($\hat{\omega}^2 = .04$) lending support to H2. Because there were no significant differences in the average size of the consideration set across the three advertising conditions, it is possible to conclude that these effects on price elasticity in the stimulus-based environment are mediated by changes in the variance in brand-utilities as a result of advertising.

The difference in price elasticity differentiating advertising condition ($\underline{M} = -1.24$) and the control condition ($\underline{M} = -2.02$) was significant, $\underline{F}(1,95) = 13.53$, $\underline{p} < .001$. This finding supports H2a that differentiating advertising will result in lower price elasticity. This parallels the results obtained for preferences, where it was found that advertising that seeks to differentiate brands resulted in increased variance in the perceived utilities of the brands.

H2a predicted that there will be no difference in price elasticity between the reminder advertising condition and the control condition. However, results showed that price

elasticity was significantly lower in the reminder advertising condition (M = 1.54) compared to the control condition (M = 2.02), $F(1,95)$ = 5.28, p < .025. Thus there was no support for H2b. These results are consistent with the findings that reminder advertising did have some effect on the variance in utilities in the stimulus-based environment, discussed in the previous section. It is possible that there was an element of differentiation even in the reminder ads. An analysis of debriefing protocols suggest that they did provide some information about the brand, which, in the absence of any other information became a basis for elimination and choice. Moreover, to the extent package information cued the recall of information learned during the first session, it is perhaps expected that reminder ads would lead to some changes in preferences.

Results presented in Table VI-22 showed that price elasticity was marginally less in the differentiating advertising condition (M = 1.24) compared to the reminder condition, (M = 1,54), $F(1,95)$ = 1.90, p < .15.

In the stimulus-based condition, there were no significant effects of advertising on the size of the consideration set. Thus, when the brand names were readily available, the presence or absence of advertising or the information provided by advertising did not have an effect on the number of brands searched. However, there were significant effects of advertising on preferences. Since

the effects on price elasticity are very similar to the pattern of results obtained for preferences, it is possible to conclude that, in stimulus-based environments, the differential preference for the various brands is a key mediator of price elasticity. This result provides strong support for H2, that the only effect of advertising in the stimulus-based choice situation will be mediated by the dispersion in brand-utilities.

TABLE VI-20

PRICE ELASTICITY IN STIMULUS-BASED ENVIRONMENT
DIFFERENTIATING VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P>F
ADVERTISING	116.86385898	1	13.53	0.001
SEQ	79.59978460	15	0.61	0.904
AD*SEQ	238.97790555	15	1.84	0.133
SS/ENV,AD,SEQ	820.53705672	95		

TABLE VI-21

PRICE ELASTICITY IN STIMULUS-BASED ENVIRONMENT
REMINDER VERSUS DIFFERENTIATING ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P>F
ADVERTISING	45.62724071	1	5.28	0.025
SEQ	122.47040230	15	0.72	0.750
AD*SEQ	89.24442242	15	0.52	0.909
SS/ENV,AD,SEQ	820.53705672	95		

TABLE VI-22

PRICE ELASTICITY IN STIMULUS-BASED ENVIRONMENT
REMINDER VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P>F
ADVERTISING	16.45361206	1	1.90	0.155
SEQ	103.76050235	15	0.80	0.788
AD*SEQ	100.72778704	15	0.77	0.769
SS/ENV,AD,SEQ	820.53705672	95		

Price elasticity in memory-based decision environments.
Under the memory-based condition there were significant
differences in price elasticity across advertising
conditions, $F_{(2,95)} = 12.72$, $p < .001$, $(\hat{\omega}^2 = .04)$. Thus the
evidence supports H3, that there will be a significant simple
effect of advertising on price elasticity in the memory-based
condition. Tables VI-23 to VI-25 present the results of the
analyses of planned comparisons to test for the effects of
reminder and differentiating advertising on price
sensitivity.

Compared to the no advertising condition, price
elasticity was greater in the differentiating advertising
condition ($M = -0.94$), but this difference was not
significant, $F_{(1,95)} = 3.70$, $p < .10$. Thus there was no
support for H3a that differentiating advertising would reduce
price elasticity.

TABLE VI-23

PRICE ELASTICITY IN MEMORY-BASED ENVIRONMENT
DIFFERENTIATING VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P>F
ADVERTISING	31.96538463	1	3.70	0.102
SEQ	131.04664046	15	1.56	0.144
AD*SEQ	85.60967106	15	1.02	0.463
SS/ENV,AD,SEQ	820.53705672	95		

TABLE VI-24

PRICE ELASTICITY IN MEMORY-BASED ENVIRONMENT
REMINDER VERSUS NO ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P>F
ADVERTISING	216.49080913	1	25.07	0.001
SEQ	118.40784879	15	0.91	0.797
AD*SEQ	130.87140122	15	1.23	0.251
SS/ENV,AD,SEQ	820.53705672	95		

TABLE VI-25

PRICE ELASTICITY IN MEMORY-BASED ENVIRONMENT
REMINDER VERSUS DIFFERENTIATING ADVERTISING CONDITIONS

SOURCE	TYPE III SS	DF	F VALUE	P>F
ADVERTISING	78.06047822	1	9.03	0.015
SEQ	184.48337550	15	1.42	0.158
AD*SEQ	210.02896638	15	1.62	0.109
SS/ENV,AD,SEQ	820.53705672	95		

The findings show that price elasticity was greater under reminder advertising ($M = -1.59$) compared to the control condition ($M = -0.53$), $F(1,95) = 25.07$, $p < .001$. Thus result supports H3b which predicted that reminder advertising will increase price elasticity. This parallels the the effects of reminder advertising on the size of the consideration set.

Results presented in Table VI-25 show that price elasticity was significantly greater in the reminder advertising condition ($M = 1.59$) compared to the differentiating advertising condition ($M = 0.94$), $F(1,95) = 9.03$, $p < .01$.

ANOVA effects treating brands as random. Thus far the analysis has treated brands as a fixed factor. In such cases, statistical generalizations are limited to the treatment effects observed with the specific treatment conditions used in the experiment. In order for statistical conclusions to extend to brands in general, the twelve level brands factor has to be treated as random. This implies that the structural model appropriate for this design is different from the one that was used for the case where brands were treated as fixed.

When the brands factor is treated as random, the usual error terms cannot be used to estimate the between-subjects effects of interest to the study (Keppel 1982). Therefore the denominator in the F-ratio is a combination of terms

which together provide an appropriate test of the treatment
effect. The terms which were combined to create the
appropriate errors terms for the hypothesized effects are
presented in Appendix IIE. These quasi F ratios have degrees
of freedom that are adjusted according to Satterthwaite's
(1946) method.

The results are similar to those obtained when brands
were treated as fixed. There was a main effect of
advertising condition, a main effect of decision environment
and an environment X advertising condition interaction. The
results are presented in Table VI-26.

TABLE VI-26

ANALYSIS OF VARIANCE
TESTS OF HYPOTHESES FOR BETWEEN SUBJECTS EFFECTS
BRANDS AS RANDOM FACTOR

SOURCE	SS	DF	DF_e	F	P > F
ENVIRONMENT	190.8005	1	45	25.92	0.001
ADVERTISING	85.1492	2	55	5.48	0.009
ENV*AD	252.5359	2	52	11.64	0.001
SEQ	92.5226	15	80	0.75	0.764
ENV*SEQ	136.4264	15	91	1.02	0.412
AD*SEQ	248.4186	30	98	0.91	0.536
ENV*AD*SEQ	310.5784	30	79	1.28	0.251

Note: DFe implies the adjusted error degrees of freedom used
for the analysis.

An analysis of planned comparisons revealed that there was a simple main effect of advertising in the stimulus-based choice environment, $F_{(2,55)} = 7.69$, $p < .01$. There were significant differences in price elasticity when subjects were exposed to differentiating advertising, compared to the situation when they were not exposed to any ads, $F_{(1,55)} = 15.05$, $p < .001$. This result supports H2a. There were also significant differences in price elasticity between the reminder ad and the control condition, $F_{(1,55)} = 5.88$, $p < .025$. The results were in support of H1 that advertising will have a significant effect on price sensitivity in the stimulus-based environment. The difference in price elasticity between the reminder advertising condition and the differentiating advertising condition was marginally significant, $F_{(1,55)} = 2.20$, $p < .10$.

In the memory-based choice environment, there was a simple main effect of advertising on price elasticity, $F_{(2,55)} = 14.16$, $p < .001$. There were significant differences between reminder advertising and differentiating advertising in their respective effects on price elasticity. There was a significant positive effect of reminder advertising, $F_{(1,55)} = 27.9$, $p < .001$. This result supports H3a. Also, differentiating advertising had a positive effect on price elasticity compared to the control condition, $F_{(1,55)} = 4.12$, $p < .05$. Price elasticity was significantly greater in the reminder advertising condition compared to the

differentiating advertising condition, $F(1,55) = 10.06$, $p < .001$.

In the absence of advertising, there was greater price sensitivity in the stimulus-based decision environment than in the memory-based environment, $F(1,45) = 55.16$, $p < .001$.

To conclude, when brands are treated as a random factor there is no major change observed in the pattern of results. The major hypotheses of the experiment were supported and therefore it was possible to demonstrate that advertising does affect price sensitivity. The nature of the effect of advertising depends on nature of the advertising and also the information that is available at the time of choice. It is possible to assert that interactions of the major results with brands are sufficiently small that the results obtained need not be limited to the brands used for the study, but are likely to hold in a more general case.

Chapter VII presents a general discussion of the results obtained in Experiment 3. Implications of the results for research on the economic effects of advertising are also discussed.

CHAPTER VII

GENERAL DISCUSSION AND IMPLICATIONS

This dissertation investigated the relationship between advertising and consumer price sensitivity. This topic has been central to the controversy about the economic effect of advertising in the economics literature (Comanor and Wilson 1979, Ornstein 1977). Two competing theories in economics have made conflicting predictions about the potential effect of advertising, based on assumptions about consumer responses to this marketing mix variable. The fragmentary empirical evidence in economics and marketing literature has not provided conclusive support for either theory. Previous researchers have tested deductions from these theories and have not been able to offer any test of the underlying theoretical assumptions. Thus there remain controversies over whether advertising increases or decreases price elasticity based on assumptions about its informative or persuasive nature, with conclusions drawn from studies that were not designed to provide answers about causality.

This dissertation proposed that prior conceptualizations about the effect of advertising on consumer price sensitivity are simplistic. It has been suggested in the literature that the diverging empirical studies on this topic have not taken account of the content of advertising (Lambin 1976, Farris

and Albion 1980). Yet research in this area has not explicitly examined the effects of variations in advertising themes on consumer behavior. This study postulated that it is the content and not simply the volume of advertising as has been traditionally studied, that determines consumer responses.

It has been suggested (Lynch & Bloom 1987) that the effect of advertising on consumer price sensitivity can be better understood by an examination of the role of advertising in the choice decision. This dissertation has empirically examined the framework offered by these authors and investigated the basic causal mechanisms underlying the effect of advertising on consumer price sensitivity in an attempt to understand and predict the direction of change. Two key theoretical constructs were postulated to mediate the relationship. The first is the size of the consideration set, which consists of brands that the consumer actively considers at the time of choice. The second is the distribution of preferences for brands in the consideration set.

It was proposed that different types of advertising affect both constructs, but have potentially different effects on the relative importance of these two mediating variables. For example, differentiating advertising has stronger effects than reminder advertising on the distribution of brand-utilities, but reminder advertising has

larger effects than differentiating advertising on the number of alternatives considered at the time of choice. It was suggested that the effect of advertising on the size of the consideration set is moderated by whether the decision environment is stimulus-based or memory-based. That is, the more the consumer relies upon memory to generate a set of candidate brands, the more important will be the tendency for advertising to increase the size of the consideration set by facilitating recall. This will lead to an increase in price elasticity. Insofar as the consumer can and does rely on external information in the decision environment to generate a consideration set, the facilitating effects of advertising will be mitigated. In such a case, advertising's primary effect will be to make demand more inelastic by producing larger perceived differences in utility among the various brands. Thus the primary contribution of the dissertation is to document the effects of advertising on these two mediating constructs that were hypothesized to have direct implications for the nature of the relationship between advertising and price elasticity.

Effects of Advertising on Distribution of Brand-Utilities

The study examined the effect of advertising on the variance of interbrand utilities. It was expected that advertising that resulted in real or 'image'-based differentiation would increase the dispersion in utilities, leading to some brands being perceived to be superior to

others. Results from the analyses of the four measures of interbrand variance of revealed preference suggest that differentiating advertising did have a significant influence on the dispersion of brand-utilities in the stimulus-based decision environment. This increased dispersion in brand-utilities can be expected to have implications for price elasticities observed under this condition.

It is interesting to note that although reminder advertising was not expected to significantly affect the perceived utilities offered by the various brands, the results indicate that it did have a minor effect. It is possible that the picture of the package and the brand names were used as a basis for preference formation. Also, such ads could have cued the recall of information about attributes learned in the first session. Keller (1987) shows that such recall cues have an effect on the spread of memory-based evaluations. This suggests that even 'reminder' advertising has the potential for affecting the distribution of perceived interbrand utilities.

In conclusion, all advertising has a reminder function, that is, to provide recall cues in order to ensure that the brand is retrieved at the time of choice. Advertising also aims at differentiating the brand from competitive offerings so as to ensure that the brand is preferred to others that the consumer might consider. With respect to the first objective, both reminder and differentiating advertising had

a positive effect on the recall of brand names. With respect to the second objective, the results suggest that advertising-induced differentiation is a matter of degree. Hence, the more the utility connoting information in an ad, the more is its differentiating function over and above its reminder function. Therefore in this experiment, differentiating advertising led to an increased variance of utilities, compared to reminder ads. These findings are likely to have implications for price elasticity.

Effects of Advertising on the Size of the Consideration Set

It was proposed that the effects of advertising on price elasticity could be better understood by examining its effects on the size of the consideration set. The pattern of results provide interesting insights on how advertising might affect the size of the consideration set by influencing the ability and the motivation to retrieve brand names for consideration. The findings suggest that the effects of advertising on the consideration set could differ, depending on the type of advertising and the decision environment.

Advertising effects on knowledge and remembrance of substitutes versus perceived substitutability of brands. Price elasticity is a function of perceived substitutability (Nelson 1974a, 1978). Economists of the information school have assumed that advertising provides information about brands and increases the number of known substitutes. This implies that if advertising has made consumers 'aware' of a

particular brand when it was first introduced, this should be sufficient for it to be considered at the time of choice. Consumer researchers (Alba and Chattyopadhyay 1985; Nedungadi 1987) have suggested that mere awareness of a brand does not necessarily ensure that the brand is retrieved at the time of choice - the brand has to be retrieved from long-term memory. It is unlikely that all brands in a product category are effective substitutes in a particular choice decision. Consumers faced with an assortment of brands attempt to focus on a subset of alternatives in order to gain efficiency in shopping. As this experiment has demonstrated, mere awareness of a brand is not sufficient for it to be included in the consideration set. Advertising was shown to increase the number of effective substitutes by increasing the knowledge and remembrance of brand alternatives.

Advertising that emphasizes real or image-based differentiating attributes provides information about the product on the basis of which overall evaluations are made. In this experiment, it was shown that such advertising makes some brands perceived to be superior to others and therefore reduces perceived substitutability among brands. This implies that the number of effective substitutes from which consumers makes a choice is reduced, and therefore a larger price discount will be required in order to get them to switch from their most preferred brands.

<u>Memory for brands and the size of the consideration set</u>.
The results from Experiment 1 and 2 show that in memory-based
decision environments, both reminder and differentiating
advertising enhance the ability to recall brand names.
Experiment 3 shows that this has a positive effect on the
size of the consideration set. The significant differences
in consideration set size in the advertising conditions as
compared to the control condition lend strong support to the
hypothesis that advertising makes brand names more accessible
in memory, and thus increases the size of the consideration
set. This memory-enhancing capability of advertising holds
for differentiating advertising as well.

<u>Dispersion of brand-utilities and the size of the
consideration set</u>. Besides affecting the memory of brand
names, advertising also increased the variance in interbrand
preferences. It has been noted earlier that differentiating
ads contained more utility connoting information than
reminder ads and thus resulted in more significant increases
in the dispersion of perceived utilities. This is reflected
in the size of the consideration set in the memory-based
condition.

Recall that the results of Experiment 2 showed that
there are no significant differences between reminder and
differentiating advertising on the ability to recall brand
names. They were equivalent in that they both increased the
ability to recall brand names from memory by increasing the

accessibility of these names. If consideration set size is a function of ability alone and is unaffected by the motivation to recall brand names from memory, then there should be no differences between the two advertising conditions in the size of the consideration set. However, results from Experiment 3 showed that consideration sets were significantly smaller in size under the differentiating advertising condition compared to the reminder advertising condition. This suggests that the information contained in the two types of advertising differentially affected the motivation to retrieve brand names in a prepurchase situation under which the objective was to search for prices. In short, different cues or criteria are used for consideration.

When brand names have to be generated form memory, the most preferred brands are likely to be recalled first (Nedungadi and Hutchinson 1985). Under such a scenario the expected marginal benefit of adding brands for consideration are expected to be low, because is is unlikely that a price discount on a less favored brand will be able to compensate for the perceived superiority of the top brands. Results showed that differentiating advertising resulted in higher perceived variance of interbrand preferences compared to reminder advertising. Consistent with this finding, when brand names had to be generated from memory, consideration set sizes were significantly smaller when advertising was of the differentiating variety.

<u>Costs of thinking</u>. Even though differentiating and reminder advertising differentially affected the interbrand dispersion of utilities, this was not reflected in significant differences in the size of the consideration set in the stimulus-based situation. This is in contrast to the memory-based case discussed in the preceding section. There is no evidence to support the prediction that differentiating advertising will reduce the size of the consideration set more than reminder advertising in the stimulus-based decision environment.

Because subjects had a list of brand names available to them, it is possible that the perceived marginal cost of thinking (Hauser & Wernerfelt 1990; Shugan 1980) associated with adding another brand to the consideration set was relatively low in stimulus-based decisions. Therefore it would require more advertising induced dispersion of brand-utilities to discourage subjects from at least considering more brands, even though some brands were more preferred and thus had a greater probability of being chosen. This would explain why, under such conditions, differentiating advertising did not result in shrinking the size of the consideration set, even though it affected the variance of brand-utilities.

Combined Effects of Consideration Set Size and Brand-Utility Dispersion on Price Elasticity

The effects of advertising on price elasticity was postulated to be mediated by two key constructs: the size of the consideration set and the variance of interbrand preference. The results on these theoretical constructs discussed in the preceding sections enable a better understanding and interpretation of advertising-induced changes in price elasticity.

In the memory-based decision environment, both reminder and differentiating advertising resulted in an increase in price elasticity. This is consistent with the finding that advertising (both reminder and differentiating) increases the size of the consideration set in memory-based environments. When brand names have to be retrieved from memory, advertising (both reminder and differentiating) increases the number of brands considered by making brand names more accessible in memory. Given the assumption that price elasticity is a positive function of consideration set size, this implies that price elasticity might increase even with differentiating advertising.

It was noted earlier that differentiating advertising resulted in smaller consideration sets compared to reminder advertising. This finding is consistent with the result that differentiating advertising led to a greater variance in interbrand preferences. The differences in price elasticity

between the two advertising conditions reflect the indirect effects of the dispersion of utilities on the price elasticity of demand. However, the recall-facilitating effect of differentiating advertising was more powerful, so that there was an overall increase in the size of the consideration set even under differentiating advertising. Thus, compared to the no advertising condition, differentiating advertising led to greater price sensitivity.

In the stimulus-based condition, there were no significant effects of advertising on the size of the consideration set. The presence or absence of advertising or the information provided by advertising did not have an effect on the number of brands searched when the brand names were readily available. On average, consumers searched for information on about roughly one-third of the available brands. As has been noted earlier, in this situation the facilitating effects of advertising on recall are not as important as in the memory-based case.

However, there were significant effects of advertising on the dispersion of brand-utilities. Since the effects on price elasticity are very similar to the pattern of results obtained for the dispersion of preferences, it is possible to conclude that in stimulus-based environments, the differential preference for the various brands is a key mediator of price elasticity.

The significant differences in price elasticity between the differentiating advertising condition and the control condition strongly support the prediction that differentiating advertising increases the interbrand variance in preferences and thereby decreases price elasticity. As compared to the control condition, even reminder advertising reduced price elasticity in the stimulus-based environment. This is consistent with the finding that reminder advertising influenced the dispersion of utilities, although the effect was not as large as in the case of differentiating advertising. The results as a whole suggest that when brand names are readily available and consumers rely on this information to generate the consideration set, the effects of advertising on price elasticity are primarily mediated by its effect on the distribution of perceived utilities for the various brands.

From these results, it is possible to conclude that when brand names have to be recalled from memory, price elasticity is a function of both the size of the consideration set and the dispersion of brand-utilities. Advertising has a potential effect on both these constructs. The net impact of advertising on price elasticity therefore depends on the strength of its effects on these two variables. In the stimulus-based environment, the effect of advertising on price elasticity is a function of its effect on interbrand variance in preference.

Implications

This research has demonstrated that it is possible to make predictions about the potential effects of advertising on price elasticity by examining its effects on the two key constructs. They are the size of the consideration set and the dispersion of brand-utilities. Price elasticity is positively related to the size of the consideration set and negatively related to the dispersion of utilities across the various brands. These two variables mediate the relationship between advertising and price elasticity, and the net effect depends on the strength of the parameters. Different kinds of advertising and the decision environment have different effects on these parameters.

Environmental factors affecting the mediating role of consideration set size. In cases in which brand name recall is not important for the consumer to generate the consideration set, the effects of advertising on the memory for brand names is not likely to be the major determinant of the size of the consideration set. For example, if a customer relies on the salesperson's recommendations for purchasing a durable good, then the reminder function of advertising has a lesser role. Here, advertising's effects on price sensitivity will be primarily based on ad-induced dispersion of preferences. The greater the variance in preference for the brands caused by advertising, the lesser will be the price sensitivity.

The more that the consideration set has to be generated from memory, the greater will be the reminder effects of advertising on the size of the consideration set. The larger the effects of advertising on the consideration set size, the greater is the price elasticity for the other brands in the consideration set. For example, consumer try to recall the stores at which they could shop, and all such stores are not arrayed in front of them, they have to rely on memory to retrieve names of the stores. To the extent that some stores advertise, they are likely to be recalled and as a result get included in the consideration set. In such a case, advertising performs an important reminder function and its effect on price elasticity is greatly influenced by its effect on the size of the consideration set.

Environmental factors mediating the role of dispersion of brand-utilities. In this research, the brands were unfamiliar to the subjects. Therefore it was relatively easy to change the distribution of preferences through advertising. But in situations in which consumers have prior familiarity with the product, the effects of advertising on the dispersion of utilities is likely to be smaller. Therefore advertising induced differentiation will have a lesser effect on price elasticity. In such a case, if the recall-facilitating aspect of advertising is important in determining the size of the consideration set, then even

differentiating advertising might lead to an increase in price elasticity.

This research suggests that the mechanism by which advertising effects on price sensitivity when all brand names are externally available might be quite different from that when the names are retrieved from memory. Results showed that advertising influences the ability to retrieve brands in the memory-based situation, with much smaller effect on the stimulus-based situation. It also differentially affects the motivation to consider more brands. Because the cost of thinking associated with adding another brand to the consideration set may be less in stimulus-based decisions, it requires more advertising-induced dispersion of brand-utilities to discourage consumers from at least considering brands.

Moreover, in the memory-based environments, more preferred brands are likely to be recalled first. Thus if advertising increases the dispersion of interbrand preferences, it will reduce the size of the consideration set. To the extent that in stimulus-based environments, order of search is guided by the organization of the display (Bettman & Kakkar 1977; Biehal & Chakravarti 1982; Alba et al. 1990) such that the most preferred brands are not considered first, increases in interbrand variance resulting from advertising should increase the motivation to consider

more brands (Nelson 1970, 1974a, 1975; Hauser & Wernerfelt 1990).

The stimulus-based choice situation was used as the baseline to demonstrate that consideration sets are likely to be situation-specific. Here, he same differentiating ads did not lead to any significant reduction in the size of the consideration set, even though they had significant effects on the dispersion of brand-utilities. It is likely that in the laboratory setting, subjects were more motivated than the average consumer. In this situation in which perceived costs were less than expected benefits, the consideration set size was not significantly reduced. Therefore the effects of advertising on price elasticity were mediated by the dispersion of brand-utilities.

It can be argued that in real-world situations the information processing costs of exhaustively considering and evaluating all brands for choice are much higher than in the laboratory setting. Therefore, even decisions which are in principle, stimulus-based have a large memory component(Alba et al. 1990). Consumers need to concentrate on a subset of alternatives in order to gain efficiency in shopping. For example, the consumer making purchases in the branded packaged goods category does not have the time nor the motivation to scan every item on the supermarket shelf before making a decision (Park et al 1989). In such a situation, the reminder function of advertising becomes crucial in

getting a brand considered for choice. This will have implications for price elasticity.

The memory effects of advertising are even more dramatic in the case of situations which are necessarily memory-based, as in the case of the store choice decision discussed earlier. In this case, advertising can ensure that a brand is included in the consideration set and thus have a significant effect on price elasticity.

Managerial Implications

The dissertation highlights certain important facts about the effect of advertising on consumer behavior which could be useful to managers. It provides insights on the two major functions of advertising, which combine to produce its effects on price sensitivity. Therefore, the difference between reminder and differentiating advertising is more a matter of degree. Depending on the environment in which the decision is made, advertising effects memory for brand names and/or preferences - and the relative strength of these two parameters determines its net effect on price elasticity. This suggests that a differentiating strategy need not necessarily result in reduced price sensitivity. As this study showed, if the effects of advertising on memory are substantial, then the increase in price elasticity as a result of the larger consideration set size can offset the reduction due to the advertising-induced variance in preferences.

Implications for Public Policy

This study has considered the economic effect of different types of advertising strategies which are likely to be adopted by marketers. The results of the study have implications for public policy. It suggests that it is difficult to theorize about the economic effect of advertising in terms of general statements about whether advertising increases or decreases price elasticity of demand.

The study supports the view of the information school that advertising does have some economic value; it provides information on the existence of substitutes. In addition, it demonstrates that advertising provides recall cues and thereby increases the number of effective substitutes that are considered at the time of choice. Price elasticity is a function of perceived substitutability, therefore advertising by increasing the number of brands considered, can increase price elasticity.

The market power view of advertising postulates advertising to reduce price sensitivity by artificially differentiating brands. This study demonstrated that even when advertisers pursue a differentiating strategy, the resulting effects on price sensitivity need not always be negative. The net effects of advertising on price elasticity depend on the strength its effect on the two mediator variables postulated in this dissertation.

Future Research

Effects of prior experience. This study considered the effects of advertising on price elasticity for brands which are unfamiliar. It is likely that, in the case of familiar brands, the effects of advertising-induced dispersion of interbrand utilities on price elasticity will be smaller. Future research can examine how prior knowledge moderates the effects of advertising on the two key constructs.

Framing effects on the weights of price and non-price attributes. This study has considered how advertising might influence price elasticity by altering the distribution of interbrand preference. Another way in which advertising might potentially reduce price sensitivity is by increasing the salience of non-price attributes and thereby decreasing the importance of price. Thus, advertising can cause consumers to 'frame' their choices in terms of the evaluative criteria suggested by advertisers (Bettman & Sujan 1987; Alba & Hutchinson 1990). It has been reported that increasing the salience of product attributes suppresses the ability to recall unmentioned attributes (Alba & Chattyopadhyay 1985). Also, by increasing the salience of a particular attribute, advertising might ensure that this attribute is used in subsequent evaluations, and thereby increase the effective weight given to that attribute (Feldman & Lynch 1988). Taken together, this suggests that advertising, by increasing the salience of non-price attributes, could lead to decreased

price sensitivity. Conversely, price advertising, typical of supermarket advertising for packaged goods, can increase the salience of price and suppress the salience of non-price attributes. Bettman and Sujan's (1987) work suggests that these effects will be stronger for consumers low in prior knowledge. Future research could study the effect of advertising price versus non-price attributes on price elasticity.

Effects of interbrand variance in the amount of advertising. In this experiment, all brands were advertised, and therefore advertising had a significant positive effect on recall and consideration set size. This led to an increase in price elasticity. In the real world, some brands are advertised, and marketers' tactics can increase recall deficits of consumers (Alba & Hutchinson 1990). Research has shown that presenting a subset of brands is likely to inhibit the recall of competing brands (Alba & Chattyapadhyay 1985). Thus if some big advertisers get a large share of exposures, unadvertised brands have a lower chance of being considered and therefore of being chosen. Future research can examine the effect of unequal levels of advertising by competitors on the resulting price elasticity. This would be of interest to managers and public policy makers.

APPENDIX I

DETAILED LISTING OF STIMULI AND TASKS FOR PRETESTS

INTRODUCTION AND PRELIMINARY INSTRUCTIONS

We appreciate your participation in this study which is concerned with consumer responses to new brands of candy.

During this experiment, you will be required to use the keyboard to type your responses when prompted by messages on the screen. After you have finished typing in your response, press the <RETURN> key (marked with the orange sticker), so that your responses may be "received" by the computer. In case of a typing error, you may use the <BACKSPACE> key to erase the typed letters and retype the correct letters. This key is located to the right of the number keys at the top row of the keyboard (just above the <RETURN> key).

Press <RETURN> to continue.....

APPENDIX IA-1 -- continued

This experiment is concerned with consumer responses to several new brands of chocolate candy bars which are now available in Canada and which are likely to be introduced into the Gainesville market.

In the next few minutes you will be given some information on these candy bars. Please pay attention to the information. After this, you will be asked some questions on them. If you do not answer the questions correctly, you will be shown the information once more.

Press <RETURN> to continue.....

<u>APPENDIX IA-1 -- continued</u>

The Company is attempting to assess consumer responses to the new brands of chocolate candy bars before the test market. Some information on these candy bars, namely, the brand name, the weight and what it contains, will now appear on the screen. Please pay attention to the information.

Press <RETURN> to continue....

<u>APPENDIX IA-2</u>

DETAILED LISTING OF BRAND DESCRIPTIONS

1)   BRAND NAME: Coffee Crisp
     WEIGHT: 1.9 oz.
     CONTAINS: Crisp cream-filled
                      biscuit

---

2)   BRAND NAME: Dairy Milk
     WEIGHT: 1.45 oz.
     CONTAINS: Pure milk chocolate

---

3)   BRAND NAME: Sweet Marie
     WEIGHT: 2.1 oz.
     CONTAINS: Chewy fudge, caramel and
                      peanuts

---

4)   BRAND NAME: Crispy Crunch
     WEIGHT: 1.75 oz.
     CONTAINS: Lots of peanuts in milk
                      chocolate

APPENDIX IA-2 -- continued

5)   BRAND NAME: Caramilk
     WEIGHT: 2.0 oz.
     CONTAINS: Bigger bites of soft
                      caramel

---

6)   BRAND NAME: Gold
     WEIGHT: 1.6 oz.
     CONTAINS: Crisps and a kiss of
                      honey

---

7)   BRAND NAME: Eat-more
     WEIGHT: 1.4 oz.
     CONTAINS: Peanuts in chocolatey
                      coating

---

8)   BRAND NAME: Mr. Big
     WEIGHT: 2.2 oz.
     CONTAINS: Wafers, caramel and rice
                      crisps

9)   BRAND NAME: Crunchie

        WEIGHT: 1.9 oz.

        CONTAINS: Golden honeycomb center

---

10)   BRAND NAME: Smarties

        WEIGHT: 2.1 oz.

        CONTAINS: Candy-coated chocolate

                         centers

---

11)   BRAND NAME: Breakaway

        WEIGHT: 1.6 oz.

        CONTAINS: Crispy wafer and chewy

                         caramel

---

12)   BRAND NAME: Mirage

        WEIGHT: 1.5 oz.

        CONTAINS: Milk chocolate - thick,

                         yet light

APPENDIX IA-3

INSTRUCTIONS FOR RECOGNITION TASK

You will now be seeing the names of several brands of candy bars. Half of these are brands that you have just received information on. Additionally, half of the list consists of brand names that you did not encounter before. Your task is to identify which are the brand names for which you have just seen some information. If you recognize a particular brand as one on which you have just seen some information, type "Y", if not, type "N" and press <RETURN>.

Press <RETURN> to continue....

APPENDIX IA-4

LIST OF BRANDS USED AS DISTRACTORS IN RECOGNITION TASK

Wunderbar

Aero

Coconut

Bounty

Glossettes

Five Star

Gems

Jersey Milk

Big Turk

Nutties

Snack

Grand Slam

INSTRUCTIONS FOR BRAND NAME RECALL TASK

Earlier you saw information on several brands of candy bars. Your task is to recall as many brand names as possible. Please list them in the space provided below.

<u>APPENDIX IB-2</u>

INSTRUCTIONS FOR ATTRIBUTE RECALL TASK

Earlier you saw information on several brands of Canadian candy bars. Your task is to recall as much of the information on what it contains. Write down what you can remember in as much detail as you can.

BRAND NAME	CONTAINS
Crispy Crunch	_____
Caramilk	_____
Gold	_____
Smarties	_____
Breakaway	_____
Mirage	_____
Eat-more	_____
Mr. Big	_____
Crunchie	_____
Coffee Crisp	_____
Dairy Milk	_____
Sweet Marie	_____

<u>APPENDIX IB-3</u>

INSTRUCTIONS FOR PREFERENCE RATING TASK

Listed below are twelve different brands of candy bars. Your task is to rate them on a scale of 1 (Extremely low in preference) to 7 (Extremely high in preference).

BRAND NAME	PREFERENCE RATING
Crispy Crunch	_____
Caramilk	_____
Gold	_____
Smarties	_____
Breakaway	_____
Mirage	_____
Eat-more	_____
Mr. Big	_____
Crunchie	_____
Coffee Crisp	_____
Dairy Milk	_____
Sweet Marie	_____

APPENDIX IB-4

INSTRUCTIONS FOR MOST LIKELY PRICE ESTIMATE

"SKOR" is a brand of candy currently available in the Gainesville market. It is priced at 55 cents. If the new brands were also available, please try to estimate the most likely price at which you might expect to see them in most stores. Your task is to estimate the most likely price for each brand listed below.

BRAND NAME	MOST LIKELY PRICE
Crispy Crunch	_____
Caramilk	_____
Gold	_____
Smarties	_____
Breakaway	_____
Mirage	_____
Eat-more	_____
Mr. Big	_____
Crunchie	_____
Coffee Crisp	_____
Dairy Milk	_____
Sweet Marie	_____

APPENDIX IB-5

INSTRUCTIONS FOR HIGHEST (LOWEST) LIKELY PRICE ESTIMATES

"SKOR" is a brand of candy currently available in the Gainesville market. It is priced at 55 cents in most stores. If the new brands were available in the market and you were to visit several stores, try to estimate the highest (lowest) likely price for these brands across stores. Your task is to estimate the highest (lowest) likely price for each brand listed below.

BRAND NAME	HIGHEST LIKELY PRICE	LOWEST LIKELY PRICE
Crispy Crunch	_____	_____
Caramilk	_____	_____
Gold	_____	_____
Smarties	_____	_____
Breakaway	_____	_____
Mirage	_____	_____
Eat-more	_____	_____
Mr. Big	_____	_____
Crunchie	_____	_____
Coffee Crisp	_____	_____
Dairy Milk	_____	_____
Sweet Marie	_____	_____

INSTRUCTIONS FOR SIMILARITY RATING TASK

Your task is to make similarity judgments between pairs of candy bars. The referent candy bar is SMARTIES. Please rate the similarity of this brand with other brands on a scale of 1 (Highly Dissimilar) to 5 (Highly Similar).

SMARTIES

	Highly Dissimilar				Highly Similar
Crispy Crunch	1	2	3	4	5
Caramilk	1	2	3	4	5
Gold	1	2	3	4	5
Breakaway	1	2	3	4	5
Mirage	1	2	3	4	5
Eat-more	1	2	3	4	5
Mr. Big	1	2	3	4	5
Crunchie	1	2	3	4	5
Coffee Crisp	1	2	3	4	5
Dairy Milk	1	2	3	4	5
Sweet Marie	1	2	3	4	5

<u>APPENDIX IC-1</u>

INTRODUCTION BEFORE EXPOSURE TO ADVERTISING

You have just been exposed to some information on several brand of candy bars. You will now be seeing ads for these brands before continuing to the next screen.

The experimenter will show you the ads only when all of you are ready. So if you have finished before the others, please wait quietly for the other participants to finish. DO NOT PRESS <RETURN> NOW.

Only after you have seen the ads should you press <RETURN> to continue...

APPENDIX IC-2

INTRODUCTION TO MEMORIZATION TASK

You will now be given a list consisting of brand names of candy bars available in Gainesville. You are required to memorize these names.

APPENDIX IC-3

INSTRUCTIONS AND STIMULI FOR THE MEMORIZATION TASK

Please take the next three minutes to memorize the following list of candy bar names:

1.Cellas	2.Crunch
3.Whatchmacallit	4.Cote d'Or
5.Pastilles Almond	6.Marabou
7.Mars	8.Twix
9.Krackel	10.Kitkat
11.Tobler	11.Skor
13.Almond Joy	12.100 Grand
15.Barnone	16.Solitaires
17.Suvretti	18.M & M's
19.Capers	20.Ferrara
21.Mr. Goodbar	22.Chocoletti
23.Chocolat Lindt	24.Alpin Milch

APPENDIX II

DETAILED LISTING OF STIMULI AND TASKS FOR EXPERIMENT 3

PRICE PROFILES FOR THE TWELVE BRANDS
ACROSS FIRST 8 SHOPPING TRIPS

SHOPPING TRIPS

BRAND	1	2	3	4	5	6	7	8
1	L	L	L	L	L	L	L	L
2	L	L	L	L	H	H	H	H
3	L	L	L	L	H	H	H	H
4	L	L	H	H	L	L	H	H
5	L	H	L	H	L	H	L	H
6	L	L	H	H	L	L	H	H
7	L	H	H	L	H	L	L	H
8	L	H	H	L	L	H	H	L
9	L	H	L	H	H	L	H	L
10	L	H	L	H	L	H	L	H
11	L	H	H	L	H	L	L	H
12	L	L	H	H	H	H	L	L

APPENDIX IIA-1 -- continued

PRICE PROFILES FOR THE TWELVE BRANDS
ACROSS LAST 8 SHOPPING TRIPS

SHOPPING TRIPS

BRAND	9	10	11	12	13	14	15	16
1	H	H	H	H	H	H	H	H
2	L	L	L	L	H	H	H	H
3	H	H	H	H	L	L	L	L
4	L	L	H	H	L	L	H	H
5	L	H	L	H	L	H	L	H
6	H	H	L	L	H	H	L	L
7	H	L	L	H	L	H	H	L
8	H	L	L	H	H	L	L	H
9	H	L	H	L	L	H	L	H
10	H	L	H	L	H	L	H	L
11	L	H	H	L	H	L	L	H
12	H	H	L	L	L	L	H	H

APPENDIX IIA-2

HIGHEST AND LOWEST PRICES FOR TWELVE BRANDS
IN THE NO ADVERTISING CONDITION [a]

BRAND	HIGHEST LIKELY PRICE	LOWEST LIKELY PRICE
Crispy Crunch	64.25	41.75
Caramilk	63.63	42.38
Gold	64.25	41.13
Smarties	60.50	37.38
Breakaway	61.76	39.88
Mirage	66.13	43.00
Eat-more	60.50	39.25
Mr. Big	72.37	47.38
Crunchie	64.25	44.25
Coffee Crisp	62.38	41.75
Dairy Milk	64.88	44.25
Sweet Marie	66.75	46.12
Mean	64.30	42.42

[a]: Prices are in cents

APPENDIX IIA-3

HIGH AND LOW PRICES USED FOR THE EXPERIMENT

BRAND	HIGH PRICE	LOW PRICE
Crispy Crunch	$0.65	$0.40
Caramilk	$0.65	$0.40
Gold	$0.65	$0.40
Smarties	$0.60	$0.35
Breakaway	$0.60	$0.35
Mirage	$0.65	$0.40
Eat-more	$0.60	$0.35
Mr. Big	$0.70	$0.45
Crunchie	$0.65	$0.40
Coffee Crisp	$0.60	$0.35
Dairy Milk	$0.65	$0.40
Sweet Marie	$0.70	$0.45

<u>APPENDIX IIB-1</u>

BRAND-TRIPLES USED IN EXPERIMENT 3

TRIPLE # 1   Crispy Crunch
                  Caramilk
                  Gold

TRIPLE # 2   Smarties
                  Breakaway
                  Mirage

TRIPLE # 3   Eat-more
                  Mr. Big
                  Crunchie

TRIPLE # 4   Coffee Crisp
                  Dairy Milk
                  Sweet Marie

APPENDIX IIB-2

GROUPING OF SEQUENCE FACTOR FOR COUNTERBALANCING ORDER
OF PRESENTATION OF BRAND TRIPLES

	STIMULUS-BASED			MEMORY-BASED		
	NO-AD	R	D	NO-AD	R	D
ORDER 1 SEQ 1,8,9,16						
ORDER 2 SEQ 3,6,11,14						
ORDER 3 SEQ 2,7,10,15						
ORDER 4 SEQ 4,5,12,13						

<u>APPENDIX IIB-3</u>

ORDER OF PRESENTATION OF PRODUCT AND PACKAGE INFORMATION

	POSITION			
	1	2	3	4
<u>ORDER 1</u>	3	1	4	2
<u>ORDER 2</u>	1	2	3	4
<u>ORDER 3</u>	4	3	2	1
<u>ORDER 4</u>	2	4	1	3

APPENDIX IIB-4

ORDER OF PRESENTATION OF ADVERTISING INFORMATION
DURING SESSION 1

	POSITION			
	1	2	3	4
ORDER 1	1	2	3	4
ORDER 2	3	4	1	2
ORDER 3	4	3	2	1
ORDER 4	2	1	4	3

APPENDIX IIC-1

INTRODUCTION TO SECOND SESSION

Welcome to the second part of the study on consumer responses to new brands of chocolate candy bars being considered for introduction into the Gainesville market.

In this session you will be shopping for candy bars on the computer. As in the previous session, you will be required to use the keyboard to type in your responses, when prompted by messages on the screen. Please pay careful attention to these messages. If you have any questions, raise your hand and let the experimenter know that you need a clarification.

Press <RETURN> to continue....

<u>APPENDIX IIC-2</u>

PRELIMINARY INSTRUCTIONS FOR SECOND SESSION

Earlier in this experiment you have been exposed to information (brand name, weight and contents) on several brands of chocolate candy bars which are currently available in Canada, and which are now being considered for introduction into the Gainesville market. Imagine you are shopping for candy bars. You have $3.00 to spend on any of the candy bars that you have seen information on. If you are interested in getting price information on any of the brands, you will have to type in the name of the candy bar. You will be going on 16 of these shopping trips. Your purchases on any ONE of these trips will be randomly selected to decide which of the candy bars you will get.

Remember, prices will be varying across these shopping trips, so that the best buy(s) on one particular trip need not be the same for all occasions. Thus, if you are to get your money's worth, you should be making reasoned choices.

Press <RETURN> to continue....

<u>APPENDIX IIC-3</u>

INTRODUCTION TO THE PRACTICE SHOPPING TRIPS

Before shopping for candy bars, you will go on four practice shopping trips to familiarize yourself with the shopping task on the computer. For the practice shopping trips, the product category will be soaps. Remember, the prices of the different brands will be varying from one shopping occasion to the next.

The objective of the practice trips is to give you an idea of shopping on the computer. You can spend the $3.00 on one or more brands, in any combination you like.

Press <RETURN> to continue....

APPENDIX IIC-4

INSTRUCTIONS FOR THE PRACTICE SHOPPING TRIPS

    Given below is a listing of all brands of soap that are
available.   If you would like price information on a
particular brand, type in the brand name. You may do so for
any number of brands on which you want price information,
before making your choice.   You may make a note of any
information that the computer makes available.

The following brands are available:

        Ivory
        Jergens
        Coast
        Shield
        Irish spring
        Dial

TYPE IN THE BRAND NAME AND PRESS ENTER

APPENDIX IIC-4 -- continued

PRACTICE SHOPPING TRIP #
You have $3.00 left to spend.

Do you want to buy any more
Which brand do you want to buy?

        BRAND NAME   AMOUNT PURCHASED

        Ivory
        Jergens
        Coast
        Shield
        Irish Spring
        Dial

APPENDIX IID-1

INSTRUCTIONS BEFORE EXPOSURE TO ADVERTISING

You will now be seeing ads for the candy bars before you resume shopping. The experimenter will show the ads only when all of you are done with your shopping. So if you have finished before the others, please wait quietly for the other participants to finish also. DO NOT PRESS <RETURN> NOW.

Only after you have watched the ads should you press <RETURN> to continue....

APPENDIX IID-2

INSTRUCTIONS FOR SHOPPING TRIPS --
STIMULUS-BASED CONDITION

After these practice shopping trips, now you will be shopping for candy bars. These shopping trips will be essentially similar to the practice trips. You are given a list of candy bars that are available and you have to type in the names of the candy bars on which you want to see price information.

Remember, prices for these candy bars will be varying across purchase occasions, so that the best buys(s) on any particular trip need not be the same on another purchase occasion. Thus, if you are to get the best value for money, it is important that you make reasoned choices. Also, you are required to spend as much of your budget of $3.00 as you possible can.

Press <RETURN> to continue....

APPENDIX IID-2--continued

Given below is a listing of all brands of candy that are
available. Please type in the name(s) of the candy bars that
you want price information on. You may make a note of any
information that the computer makes available.

The following brands are available:

    Crispy Crunch
    Caramilk
    Gold
    Smarties
    Breakaway
    Mirage
    Eat-more
    Mr. Big
    Crunchie
    Coffee Crisp
    Dairy Milk
    Sweet Marie

TYPE IN THE BRAND NAME AND PRESS ENTER

APPENDIX IID-3

INSTRUCTIONS FOR SHOPPING TRIPS --
MEMORY-BASED CONDITION

After these practice shopping trips, now you will be
shopping for candy bars. These are similar to the practice
shopping trips except for one fact. In the practice trips
you were given a list to decide the brands for which you
wanted price information. But when you go on these trips,
you will not have such a list of brand names available to
you. You will have to retrieve from memory and type in the
brand names that you want price information on.

Remember, prices for these candy bars will be varying
across purchase occasions, so that the best buys(s) on any
particular trip need not be the same on another purchase
occasion. Thus, if you are to get the best value for money,
it is important that you make reasoned choices. Also, you
are required to spend as much of your budget of $3.00 as you
possible can.

Press <RETURN> to continue....

APPENDIX IID-3--continued

    In the previous session you were exposed to several
brand names (as well as weight and contents) of candy bars
which are currently available in Canada, and which are now
being considered for introduction into the Gainesville
market. Please type in the name of the brand(s) of candy
bars for which you want price information. You may make a
note of any information that the computer makes available.

TYPE IN THE BRAND NAME AND PRESS RETURN

APPENDIX IIE

ERROR TERMS USED TO TEST HYPOTHESIZED EFFECTS
BRANDS ARE TREATED AS RANDOM

QUASI F RATIOS

MAIN EFFECT OF ADVERTISING:

$$F' = \frac{MS_{AD}}{MS_{ADXBRAND} + MS_{SUB/ENVXADXSEQ} - MS_{BRANDXSUB/ENVXADXSEQ}}$$

MAIN EFFECT OF DECISION ENVIRONMENT:

$$F' = \frac{MS_{ENV}}{MS_{ENVXBRAND} + MS_{SUB/ENVXADXSEQ} - MS_{BRANDXSUB/ENVXADXSEQ}}$$

INTERACTION OF ENVIRONMENT AND ADVERTISING:

$$F' = \frac{MS_{ENVXAD}}{MS_{ADXENVXBR} + MS_{SUB/ENVXADXBR} - MS_{BRXSUB/ENVXADXSEQ}}$$

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BIOGRAPHICAL SKETCH

Anusree was born January 10,1961, in Calcutta, India. From 1965 to 1976 she attended Modern High School at Calcutta and completed the Higher Secondary Examination in 1979. For the next three years she pursued an undergraduate degree in economics at the Presidency College at Calcutta. She graduated in 1982 with honors in economics and a minor in mathematics.

She then entered the Post-graduate Program in Management at the Indian Institute of Management (I.I.M.) Calcutta in July 1982. In April 1984, she received her master's degree in Management from I.I.M., having specialized in marketing and finance.

In 1984 Anusree joined Lintas India Limited, a member of the SSC&B:LINTAS Worldwide Advertising Network. She worked as account executive and worked on advertising campaigns for Lever Brothers, Union Carbide, among other accounts.

She gave up the job in advertising in order to pursue doctoral studies in the United States. In Fall 1985, she was admitted to the Ph.D. program in marketing at the University of Florida and has worked towards her degree since that time.

During her term in the doctoral program, Anusree acquired teaching experience as an instructor for the

undergraduate marketing research course. She also assisted with various undergraduate and graduate marketing classes. Additionally, she has worked on several academic consumer behavior research projects.

She accepted an offer for a position as Assistant Professor of Marketing at the American University. In summer 1990 she assumed the full-time position.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

John G. Lynch, Chairman
Associate Professor of Marketing

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Joseph W. Alba
Associate Professor of Marketing

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

J. Wesley Hutchinson
Associate Professor of Marketing

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Barton A. Weitz
Professor of Marketing

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Richard E. Romano
Associate Professor of Economics

This dissertation was submitted to the Graduate Faculty of the Department of Marketing in the College of Business Administration and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August 1990

_____
Dean, Graduate School